SPP-M100

SERVICE MANUAL

E Model

SPECIFICATIONS

General

Frequency control
Crystal-controlled PLL
Operation mode
FM, duplex
Operation channel
25 channels
Dial signal
Tone, 10 PPS (pulse) selectable
Supplied accessories
AC power adaptor (AC-T37), Telephone line cords (long :2 / short : 1), Screws (4), Wall bracket for base unit, Rechargeable battery pack (BP-T40), Directories (2)

Handset

power source
Rechargeable battery pack BP-T40
Battery life
Standby : Approx. 30 days
Dimensions
Approx. 2 3/8 x 8 1/8 x 2 3/4 inches (w/h/d), antenna excluded
(Approx. 58 x 205 x 69 mm)
Antenna : 3 1/4 inches (81 mm)
Mass
Approx. 10.5 oz (Approx. 300g,) battery inclueded

Base unit

power source
DC 9V from AC power adaptor
Battery charging time
Apprpx. 10 hours
Dimensions
Approx. 5 3/4 x 1 3/4 x 9 1/4 inches (w/h/d), antenna excluded
(Approx. 146 x 44 x 234 mm)
Antenna : 22 7/8 inches (580 mm)
Mass
Approx. 13.5 oz (Approx. 390g,) battery inclueded

Design and specifications are subject to change without notice.

2-LINE CORDLESS TELEPHONE

MICROFILM

SONY®

TABLE OF CONTENTS

Specifications 1

1. GENERAL
- Location and Function of Controls 3
- Step 1 : Checking the Package Contents 5
- Step 2 : Setting up the Base Unit 5
- Step 3 : Preparing the Battery Pack 6
- Making Calls 7
- Receiving Calls 7
- Speed Dialing 8
- Paging 8
- Reseting the dDigital Security Code 9
- Mounting the Base Unit on a Wall 9

2. DISASSEMBLY
- 2-1. Cover (Battery) Removal 10
- 2-2. Rear (Cabinet) Removal 10
- 2-3. Hand Main Board Removal 10

3. TEST MODE 11

4 . BASE UNIT TEST MODE STATUS FLOW CHART 18

5. ELECTRICAL ADJUSTMENTS
- 5-1. Base Unit Section 19
- 5-2. Handset section 20

6. DIAGRAMS
- 6-1. Explanation of IC Terminals 22
- 6-2. Block Diagram (Base Unit Section) 24
- 6-3. Block Diagram (Handset Section) 27
- 6-4. Printed Wiring Boards (Base Unit Section) 30
- 6-5. Schematic Diagram (Base Unit Section) 33
- 6-6. Schematic Diagram (Handset Section) 37
- 6-7. Printed Wiring Boards (Handset Section) 41

7. EXPLODED VIEWS
- 7-1. Base Unit Section 47
- 7-2. Handset Section 48

8. ELECTRICAL PARTS LIST 49

Notes on chip component replacement
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

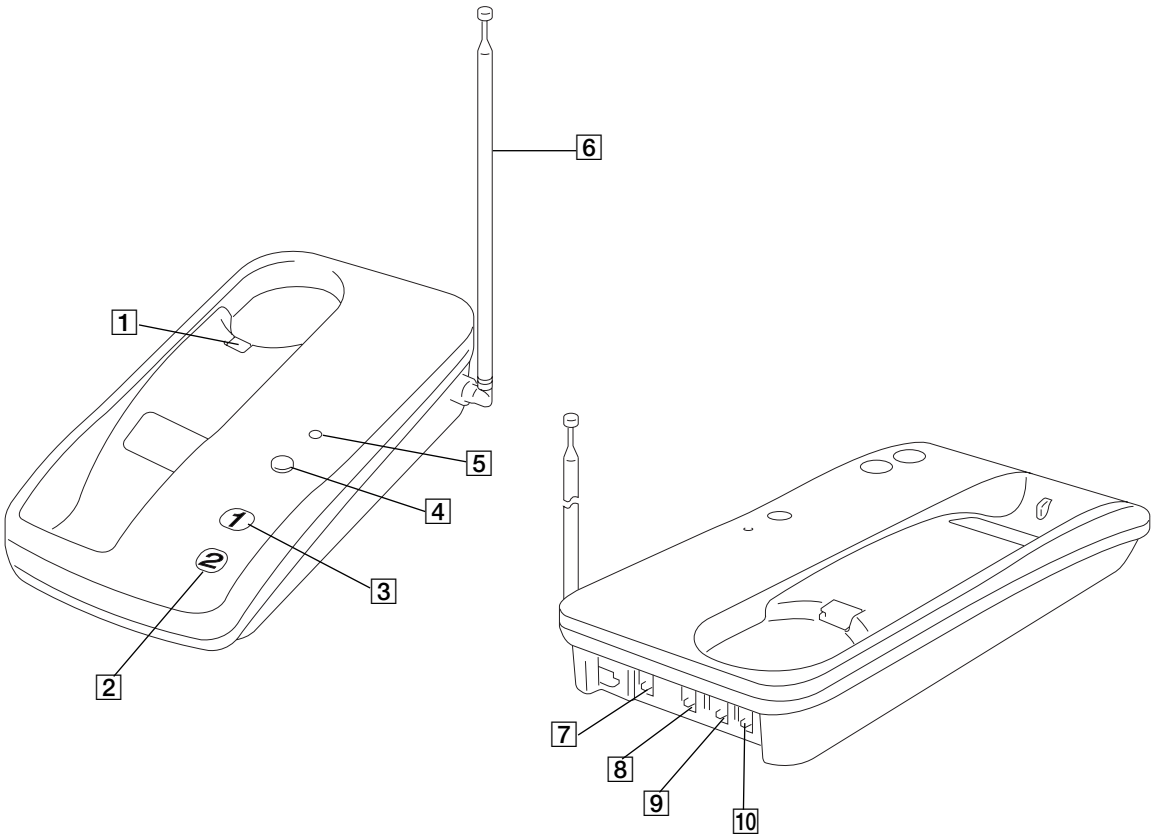
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

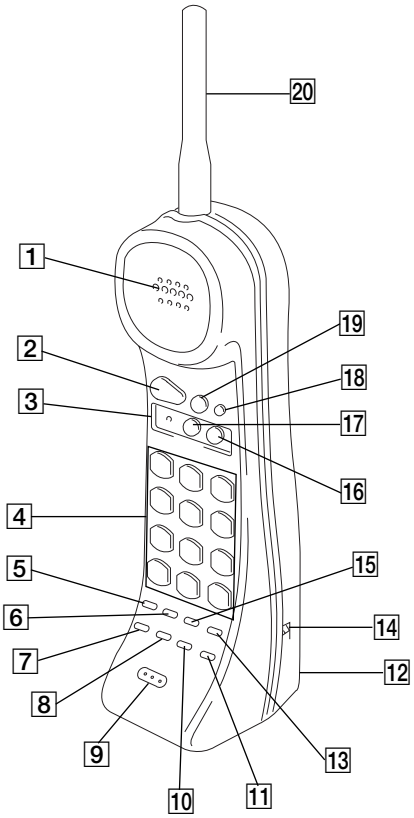
LOCATION AND FUNCTION OF CONTROLS

BASE UNIT



1 Hang-up tab
2 LINE 2 lamp
3 LINE 1 lamp
4 PAGE button
5 CHARGE lamp
6 Telescopic antenna
7 DIAL MODE switch
8 DC IN 9V jack
9 L2 (Telephone jack)
10 L1 or L1/L2 (Telephone jack)

HANDSET



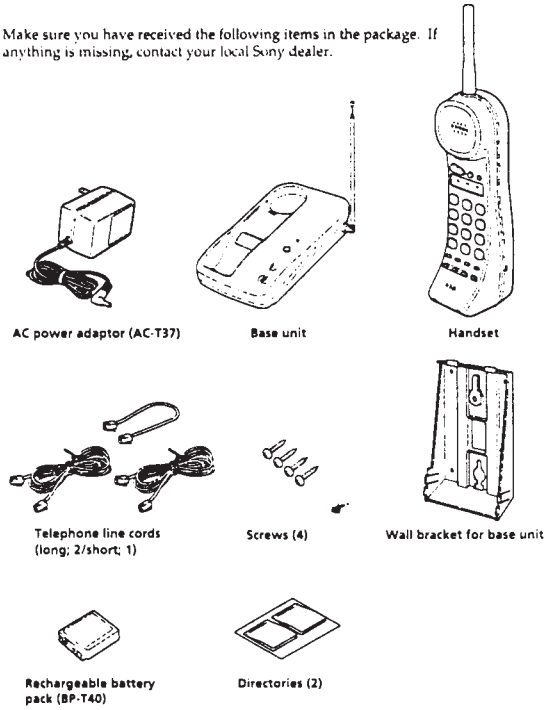
1 SPEAKER
2 TALK button
3 Battery lamps (lndicate battery level)
4 Dialing keys
5 REDIAL/PAUSE button
6 PGM button
7 HOLD button
8 CONF button
9 Microphone
10 FLASH button
11 BATT CHECK button
12 Battery conmpartment
13 SPEED DIAL button
14 RING ON/BATT SAVE switch
15 CHANNEL button
16 LINE 2 lamp
17 LINE 1 lamp
18 LINE 2 button
19 LINE 1 button
20 Helical antenna

This section is extracted from instruction manual.

Step 1

Checking the package contents

Make sure you have received the following items in the package. If anything is missing, contact your local Sony dealer.



Step 2

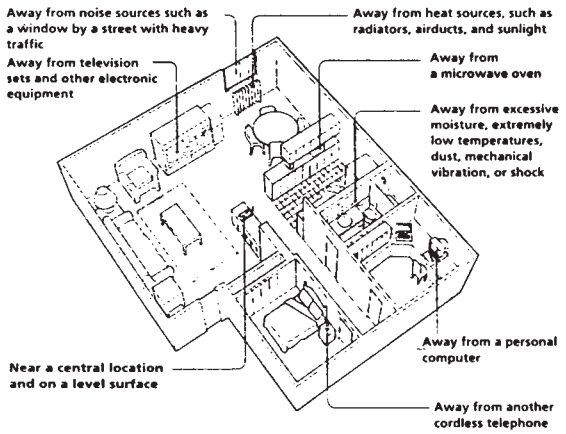
Setting up the base unit

Do the following steps:

- Choose the best location
- Connect the base unit
- Choose the dialing mode

Choose the best location

Where you place the base unit affects the reception quality of the handset.

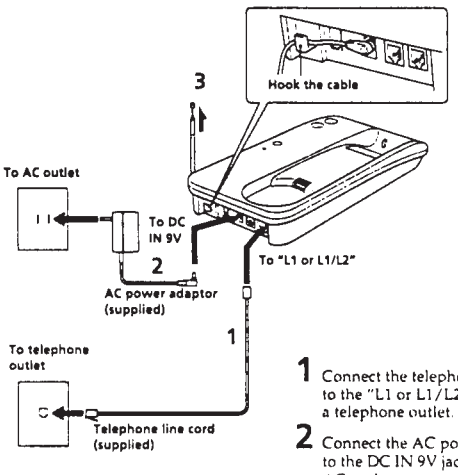


CAUTION: The cordless telephone operates at a frequency that may cause interference to nearby TVs and VCRs; the base unit should not be placed near or on the top of a TV or VCR; and, if interference is experienced, moving the cordless telephone farther away from the TV or VCR will often reduce or eliminate the interference.

Connect the base unit

If you want to hang the base unit on the wall, mount the unit first (see page 24).

To connect the base unit to a single outlet having two lines



1 Connect the telephone line cord to the "L1 or L1/L2" jack and to a telephone outlet.

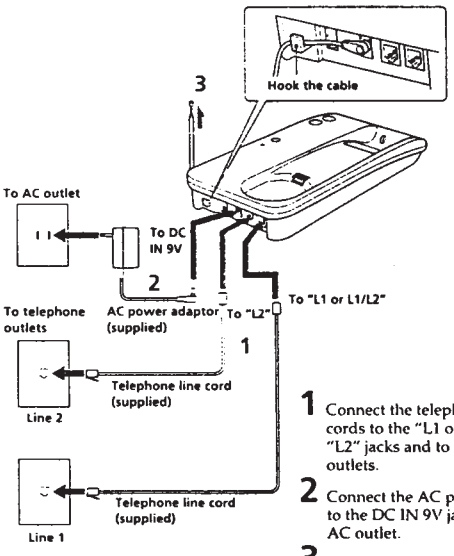
2 Connect the AC power adaptor to the DC IN 9V jack and to an AC outlet.

3 Fully extend the antenna. Make sure it points toward the ceiling.

continued

Step 2: Setting up the base unit (continued)

To connect the base unit to two separate outlets



1 Connect the telephone line cords to the "L1 or L1/L2" and "L2" jacks and to the telephone outlets.

2 Connect the AC power adaptor to the DC IN 9V jack and to an AC outlet.

3 Fully extend the antenna. Make sure it points toward the ceiling.

Notes

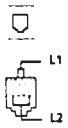
- Use only the supplied AC-T37 AC power adaptor. Do not use any other AC power adaptor.
- Connect the AC power adaptor to a continuous power supply.
- Place the base unit close to the AC outlet so that you can unplug the AC power adaptor easily.

Polarity of the plug

Tips

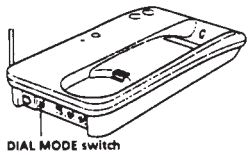
- If your telephone outlet is not modular, contact your telephone service company for assistance.
- L1 is the first phone line connected to center pair of wires. L2 is the second phone line connected to outer pair of wires.

Modular



Choose the dialing mode

For the telephone to work properly, select an appropriate dialing mode (tone or pulse).



Depending on your dialing system, set the DIAL MODE switch as follows:

If your dialing system is	Set the switch to
Tone	T
Pulse	P

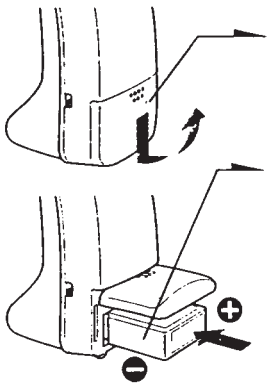
If you aren't sure of your dialing system

Make a trial call with the DIAL MODE switch set to T.
If the call connects, leave the switch as is; otherwise, set to P.

Step 3

Preparing the battery pack

Insert the battery into the handset and charge first before you start using your phone.



1 Slide open the battery compartment lid of the handset.

2 Insert the battery pack into the battery compartment.

3 Close the battery compartment lid.

4 Place the handset on the base unit.

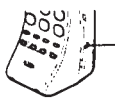
The CHARGE lamp lights up when the handset is properly seated on the charge terminals of the base unit. Charge the battery pack for more than 10 hours so that the battery is fully charged.

Battery duration

A fully charged battery pack lasts for about:

- 10 hours when you use the handset continuously
- one month when the handset is standing by in RING ON mode (the RING ON/BATT SAVE switch is set to RING ON).

  You can save the handset battery power by setting the RING ON/BATT SAVE switch to BATT SAVE. The handset won't ring (see page 19).

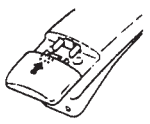


Notes

- The battery pack will gradually discharge over a long period of time, even if not in use.
- Avoid leaving the handset without charging the battery for an extended period of time so that the battery runs out completely. This can shorten the battery's life, as well as erase the speed dial numbers (see page 20) and the digital security code (see page 23). If this happens, charge it on the base unit for over 10 hours. Then reprogram the speed dial numbers. You may need to charge the battery several times before it is recharged to its full capacity.
- When you place the handset onto the base unit and charge the battery pack, a new security code will be assigned.

Tip

If the lid comes off, slide and snap it into the place as shown:



continued

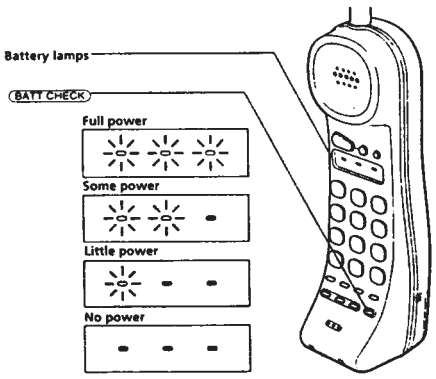
Step 3: Preparing the battery pack (continued)

To check the battery power

When you press (BATT CHECK), the lamps light up momentarily.

The battery lamps show the battery power: three lamps lit mean full power and no lamp lit means no power (see below).

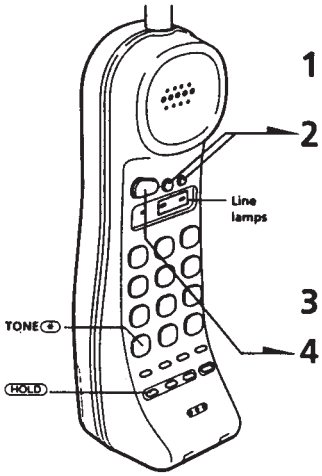
If only one lamp lights, the battery has little power, replace the handset onto the base unit to charge it as soon as possible. However, it isn't necessary to wait until the battery becomes weak. You can charge the battery at any time at your convenience. This is because the battery pack is a unique lead acid type, which doesn't suffer from the "memory effect" common with nickel-cadmium batteries.



When to purchase a new battery pack

If the battery lasts only a few minutes even after 10 hours of charging, the usable life of the battery has expired and needs replacement. Contact your local Sony authorized dealer or service center, and ask for Sony BP-T40 rechargeable battery pack.

Making calls



1 Pick up the handset from the base unit.

2 Press LINE 1 or LINE 2 to select the line, and wait until the corresponding line lamp lights up.

You then hear a dial tone. If you hear beeps, move closer to the base unit.

3 Dial the phone number.

4 When you're done talking, press TALK.

The line lamp goes off.

Additional tasks

To	Do this
Put a call on hold	Press HOLD. Press LINE 1 or LINE 2 (or TALK) to resume the conversation.
Switch to tone dialing temporarily	Press TONE ✱ after you're connected. The line will remain in tone dialing until disconnected.

Notes

- If you hear beeps during the conversation, move closer to the base unit; otherwise, the call will be disconnected after 15 seconds. Note that, however, you may not hear beeps if it's noisy on the handset.
- If you hear ringer tones during the conversation, another call is coming in on the other line (see page 19).

Tip

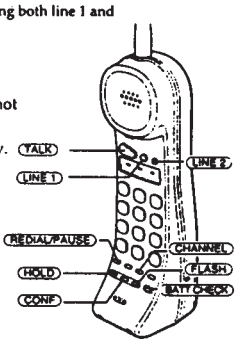
You can also press TALK to make a call on line 1.

continued

Making calls (continued)

Making another call while talking on the other line

You can talk with two parties at the same time using both line 1 and line 2. (Three-way conference)



1 Press HOLD while talking on one line.

The line in use is put on hold.

2 Press LINE 1 or LINE 2, whichever is not used.

3 Dial a phone number for the second party.

4 Press CONF (conference) after you're connected to the second party.

Now you can talk to both parties.

To disconnect the lines during a three-way conference

To disconnect both lines at the same time, replace the handset on the base unit or press TALK.

To disconnect line 1 and talk on line 2 only, press LINE 2.

To disconnect line 2 and talk on line 1 only, press LINE 1.

To put the lines on hold during a three-way conference

Press HOLD once so that both lines are put on hold.

To resume the conversations on both lines, press CONF.

To resume the conversation only on one line, press LINE 1 or LINE 2, for the line you want. (The other line is kept on hold.)

Tip

During a three-way conference, you can't use "call waiting" service even if you press FLASH.

If interference occurs on the handset

When you press LINE 1 or LINE 2, the handset automatically searches for the channel with the best reception. However, if you notice interference during a conversation, move closer to the base unit.

If interference persists, press CHANNEL to switch to another channel to improve the sound quality of your telephone conversation.

Note

If you hear five short beeps when you press CHANNEL, move closer to the base unit.

If the handset battery becomes weak during a call

The handset will beep every three seconds. Finish your call and charge the battery pack.

Even during a call, you can check the battery condition by pressing BATT CHECK.

Redialing

1 Press LINE 1 or LINE 2 to select the line, and wait until the corresponding line lamp lights up.

2 Press REDIAL/PAUSE to redial the number last dialed.

Notes

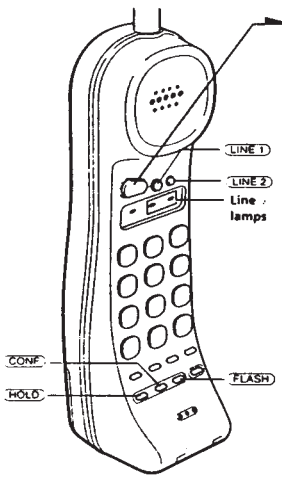
- The number last dialed cannot be stored separately for each line. It is the very last one you have dialed using either line.
- If the number exceeds 32 digits, the beeps will alert you that the number can't be dialed.

To erase the last phone number dialed

Press REDIAL/PAUSE twice.

The number will be erased from the memory, and you'll hear a long confirmation beep.

Receiving calls



1 When you hear the phone ring;

- Press TALK.

or

- Pick up the handset from the base unit when the handset is placed on the base unit.

The corresponding line lamp lights up, so you can know which line is used.

2 When you're done talking, replace the handset on the base unit or press TALK.

The line lamp goes off.

When calls come to line 1 and line 2 at the same time

To receive a call on line 1;

- Press TALK or LINE 1.

or

- Pick up the handset from the base unit when the handset is placed on the base unit.

To receive a call on line 2;

- Press LINE 2.

Additional tasks

To	Do this
Put a call on hold	Press HOLD. Press LINE 1 or LINE 2 (or TALK) to resume the conversation.
Switch to another call on the same line* ("call waiting" service)	Press FLASH. Press the button again to get back to the first caller.

* You need to subscribe to this service for each line from your telephone company.

Tip
If you don't want to hear the handset ring, set the RING ON/BATT SAVE switch to BATT SAVE. In this case, though you can still make or receive calls by pressing (TALK), only the line lamps on the base unit will inform you of incoming calls.

Receiving another call while talking on the other line

If another call comes while talking on the other line, you will hear a ringer tone through the speaker of the handset.

1 Press (HOLD).
The engaged line is put on hold.

2 Press (LINE 1) or (LINE 2), to which another call is coming.

If you want to talk to both parties at the same time
Press (CONF) (conference) after pressing (LINE 1) or (LINE 2). Now you can talk to both parties. (Three-way conference)

3 When you're done talking to the second party, press (LINE 1) or (LINE 2), on which you have talked before.
You can resume the conversation with the first party again.

To disconnect the lines during a three-way conference

To disconnect both lines at the same time, replace the handset on the base unit or press (TALK).

To disconnect line 1 and talk on line 2 only, press (LINE 2).

To disconnect line 2 and talk on line 1 only, press (LINE 1).

To put the lines on hold during a three-way conference

Press (HOLD) once so that both lines are put on hold.

To resume the conversations on both lines, press (CONF).

To resume the conversation only on one line, press (LINE 1) or (LINE 2), for the line you want. (The other line is kept on hold.)

Tip
During a three-way conference, you can't use "call waiting" service even if you press (FLASH).

To store a number to be dialed via Private Branch Exchange (PBX)

Before entering a phone number in Step 4, do as follows:

1 Enter the outside line access digit (e.g., 9).

2 Press (REDIAL/PAUSE).

To change a stored number

Store a new number, as described on the previous page.

Making calls with speed dialing

1 Press (LINE 1) or (LINE 2) to select the line and wait until the corresponding line lamp lights up.

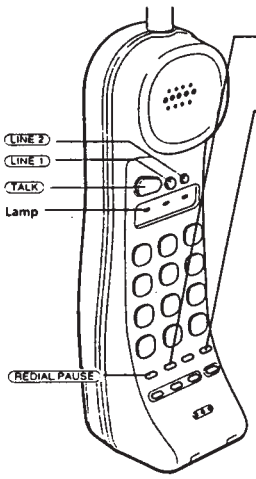
2 Press (SPEED DIAL).

3 Enter the desired speed dialing number ((0) to (9)).
The phone number stored in the speed dialing number will be dialed.

Speed dialing

You can dial with a touch of a few keys by storing a phone number on a dialing key.

Storing phone numbers



1 Press (PGM).
The left lamp flashes.

2 Press (SPEED DIAL).

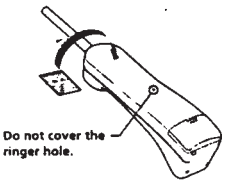
3 Press one of the dialing keys ((0) to (9)) to store a phone number on.
You hear a confirmation beep.

4 Enter the phone number you want to store.
You can enter up to 16 digits, including a tone and a pause, each of which is counted as one digit.

5 Press (PGM).
You hear a long confirmation beep, and the number is stored. The lamp goes off.

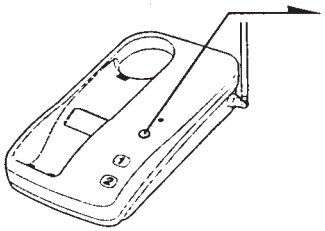
Note
Do not allow more than 20 seconds to elapse between each step of the procedure.

Tips
- If you enter a wrong number, press (PGM), then start from the beginning.
- You can attach the supplied directory on the handset. Do not cover the ringer hole.
- You can't receive calls while you're storing numbers.



Paging

You can page the handset from the base unit. Note that you can't page if the handset is in use.



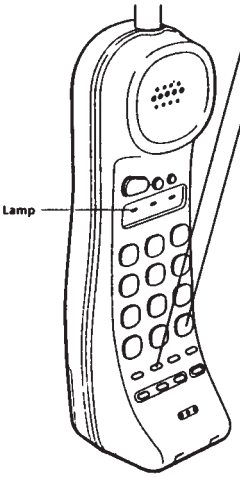
To page

Press (PAGE).
The handset rings.
When you keep pressing (PAGE), the handset rings continuously.

Note
You can't page the handset when the RING ON/BATT SAVE switch is set to BATT SAVE.

Resetting the digital security code

Since a random security code is automatically assigned between the base unit and the handset when you charge the battery pack for the first time, you normally do not need to reset the security code. However, in the unlikely event that you suspect that another cordless phone uses the same security code, you can manually change the code. Pick up the handset from the base unit, and proceed as follows:



1 Press (PGM).
The left lamp flashes.

2 Press (#).
You hear a confirmation beep.

3 Press three of the dialing keys (001 to 339) to store a new code.

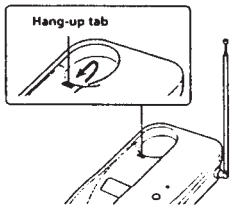
4 Press (PGM).
You hear a long confirmation beep and the lamp goes off.

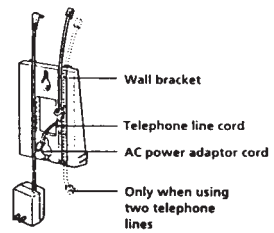
5 Immediately replace the handset on the base unit
You hear a long confirmation beep and the phone stores the new code.

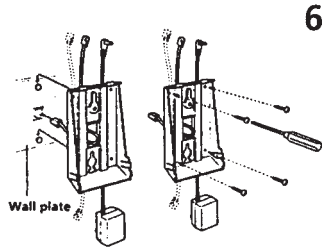
Note
If the battery pack in the handset is completely discharged, or is removed from the handset for more than several seconds, the digital security code stored will be lost. If this happens, charge the battery pack and a new security code will be automatically assigned.

Tip
This procedure will change the code in both the base unit and the handset. The code can be changed as often as desired.

Mounting the base unit on a wall







1 Remove the hang-up tab.

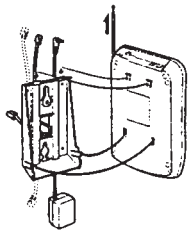
2 Reverse the hang-up tab and insert it back.

3 Attach the telephone line cord(s) to the wall bracket.

4 Hook the bracket to the wall plate, and plug one end of the telephone line cord(s) into the telephone outlet(s).
Instead of hooking to the wall plate, you can mount the wall bracket directly using the four supplied screws.

5 Plug the other end of the telephone line cord(s) into the "L1 or L1/L2" or (and) "L2" jack(s).

6 Hook the telephone to the wall bracket as illustrated.

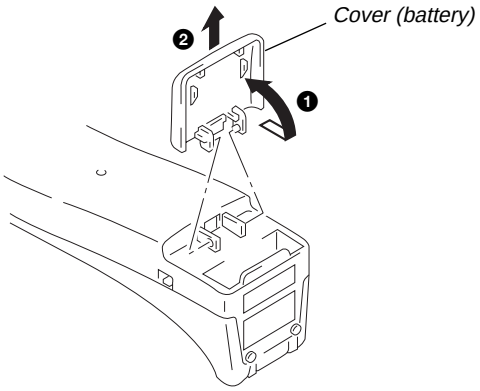


SECTION 2
DISASSEMBLY

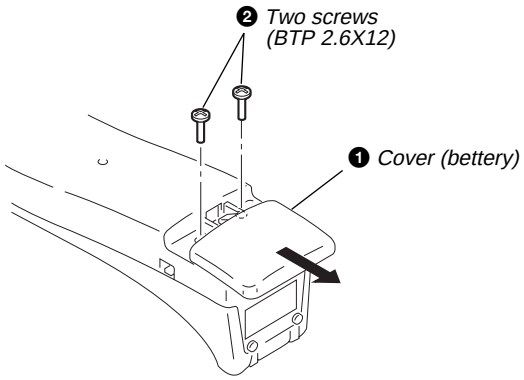
Note : Follow the disassembly procedure in the numerical order given.

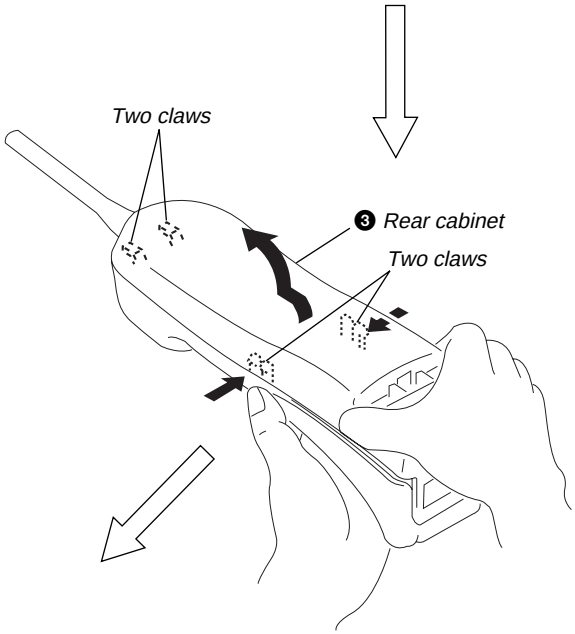
● **HANDSET**

2-1. COVER (BATTERY)

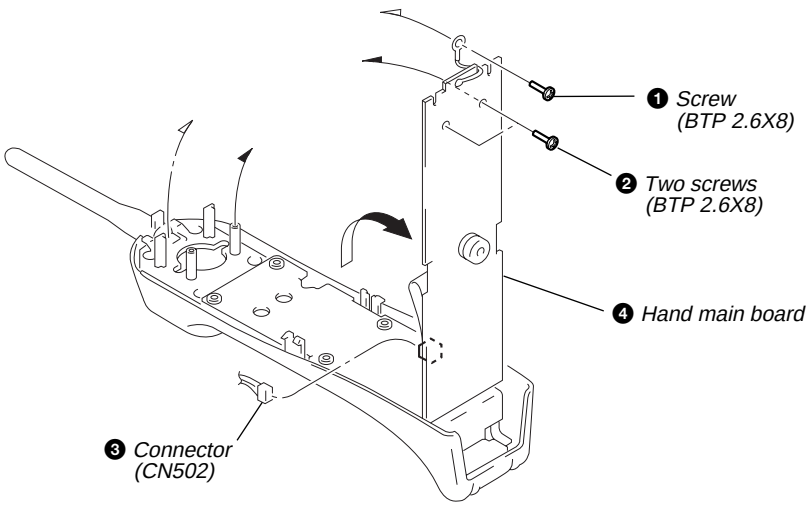


2-2. REAR CABINET





2-3. HAND MAIN BOARD



SECTION 3
TEST MODE

BASE UNIT

1. How to enter the test mode

1-1. Manual test mode

Set the DIAL MODE switch to "P" (Pulse).
While pressing the PAGE key, switch on the power supply. (Reset start)
With the PAGE key still held down, switch the DIAL MODE switch "P" (Pulse)→"T" (Tone)→"P" (Pulse). When you release the PAGE key, test mode starts.
If you release the PAGE key during this process, the machine operates in normal mode.

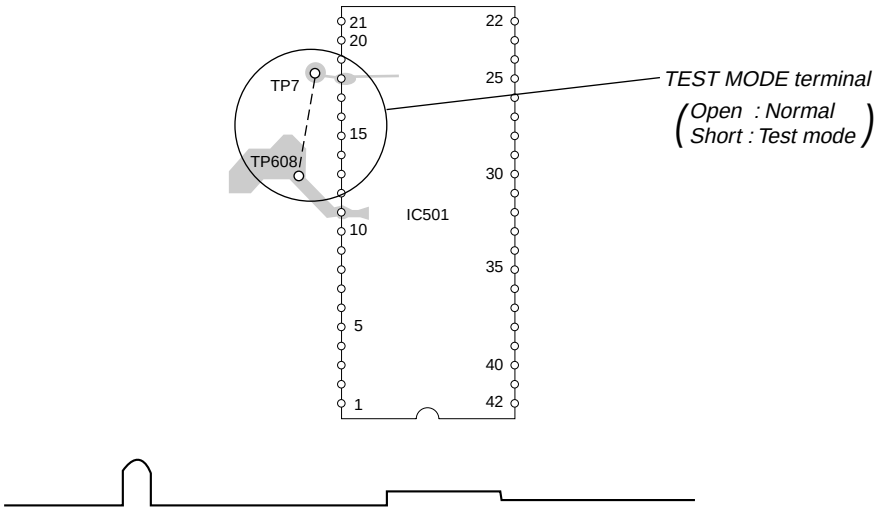
<How to Release the Test Mode>

• Pull out the AC adapter and turn off the power.

1-2. Machine test mode

Set the DIAL MODE switch to "P" (Pulse).
If you switch on the power with the TEST I/O port (IC501 ⑱ pin) set to high (connect TP7 to TP608), the machine enters test mode.

[BASE MAIN BOARD] (Component Side)



<How to Release the Test Mode>

1) Pull out the AC adapter and turn off the power.
2) Remove the short plug and turn on the power again.

1-3. Channel Setting Table

- During startup in machine test mode, make the following channel settings by loading the terminal input data. (Use of underlined channels prohibited in PRISM)
- Pressing the PAGE key in manual test mode switches one by one through the channels starting with channel 1.

Pin No. / Channel	㉙	㉔	㉓ BATT LOW	㉒ SQ	㉑ MAKE	TX FREQUENCY (MHz)	RX FREQUENCY (MHz)
CH1	L	L	L	L	L	43.720	48.760
CH2	H	L	L	L	L	43.740	48.840
CH3	L	L	L	L	H	43.820	48.860
CH4	H	L	L	L	H	43.840	48.920
CH5	L	L	L	H	L	43.920	49.020
CH6	H	L	L	H	L	43.960	49.080
CH7	L	L	L	H	H	44.120	49.100
CH8	H	L	L	H	H	44.160	49.160
CH9	L	L	H	L	L	44.180	49.200
CH10	H	L	H	L	L	44.200	49.240
CH11	L	L	H	L	H	44.320	49.280
CH12	H	L	H	L	H	44.360	49.360
CH13	L	L	H	H	L	44.400	49.400
CH14	H	L	H	H	L	44.460	49.460
CH15	L	L	H	H	H	44.480	49.500
CH16	H	L	H	H	H	46.610	49.670
CH16	L	H	L	L	L	46.610	49.670
CH17	L	H	L	L	H	46.630	49.845
CH18	H	H	L	L	L	46.670	49.860
CH19	H	H	L	L	H	46.710	49.770
CH19	L	H	L	H	L	46.710	49.770
CH20	H	H	L	H	L	46.730	49.875
CH21	L	H	L	H	H	46.770	49.830
CH22	H	H	L	H	H	46.830	49.890
CH23	L	H	H	L	L	46.870	49.930
CH23	H	H	H	L	L	46.870	49.930
CH24	L	H	H	L	H	46.930	49.990
CH24	H	H	H	L	H	46.930	49.990
CH25	L	H	H	H	L	46.970	49.970
CH25	H	H	H	H	L	46.970	49.970
TEST1	L	H	H	H	H	43.780	48.970
TEST2	H	H	H	H	H	46.910	49.720

2. Processing when test mode starts

2-1. Manual test mode

If the Test L1/L2 port (IC501⑲ pin) is high, for L1 communications, L1 is connected to the audio path and if it is low for L2 communications, L2 is connected to the audio path. Set the channel to 1 (see the channel setting table) and set TX to On.

2-2. Machine test mode

If the Test L1/L2 port (IC501⑲ pin) is high, for L1 communications, L1 is connected to the audio path and if it is low for L2 communications, L2 is connected to the audio path. Set the channel according to the port logic (see the channel setting table) and set TX to On.

2-2-1. Port contents (H : 1, L : 0)

MAKE(P50 : IC501㉑ pin) = Test CH0 (Sets the channel number within each group.)

SQ(P51 : IC501㉒ pin) = Test CH1 (Sets the channel number within each group.)

(P52 : IC501㉓ pin) = Test CH2 (Sets the channel number within each group.)

(P53 : IC501㉔ pin) = Test CH3 (Sets the channel number within each group.)

(PC2 : IC501㉙ pin) = TEST–GP (Group setting) 0 : Group 1, 1 : Group 2

3. Line test

3-1. L1/L2 dial test

If the Test L1/L2 Port (IC501⑲ pin) is high, L1 is connected, if it is low, L2 is connected, then dial transmission is executed.

The dialing is sent to the connected line in the order "P" (Pulse) mode →[0]→ "T" (Tone) mode→[1]→[4]→[8]→[#].

3-2. L1/L2 parallel detection

When parallel DET ON is detected for the connected line, the [LINE 2] LED lights up and after detection, when parallel DET OFF is detected, the [LINE 2] LED goes out after 500 msec.

The [LINE 2] LED goes out when the line test is complete and for L1/L2 dial test shifting.

3-3. L1/L2 ring detection

The [LINE 1] LED only lights up if the ring DET ON is detected for the line that is not connected and when the ring goes off, the [LINE 1] LED goes out.

3-4. Third-party communications test

If the [DIAL MODE] switch is set to "T" (Tone) during the line test, L1/L2 is connected with the third-party communications audio path without channel change and TX off.

This state is retained until the [PAGE] key is pressed.

3-5. Shifting to L1/L2 dial test

The machine is shifted to the L1/L2 dial test by switching the Test L1/L2 port (IC501⑲ pin) high/low during line testing. During an L1 connection, if low is detected, the machine shifts to L2 dial testing and during an L2 connection, if high is detected, the machine shifts to L1 dial testing.

3-6. Line test end

Pressing the [PAGE] key during line testing ends the line test. The dial pulse 0 is send on the connected line in "P" (pulse) mode and the machine shifts to the wireless test.

4. Wireless test

4-1. [PAGE] key processing

The channel is incremented only in manual test mode. Channel incrementing is carried out in 25channel mode.

Incrementing follows the sequence CH1 → CH2 → • • • • →CH24 →CH25 →TI→T2. (See the channel setting table.)

4-2. Message transmission/reception test

4-2-1. When the ID = 3AA, Data = AAA message is received, a message with the same contents is returned.

4-2-2. If 1 data is received 10 times in a row, the [LINE 1] LED lights up. After such data is received, the [LINE 1] LED stays on until the power is switched off.

4-3. Continuous message transmission test

During L1 connection, when L2 Ring DET ON is detected and during L2 connection, when L1 Ring DET ON is detected, the test message is transmitted continuously. The transmitted message is the command frame, ID = 3AA, Data = AAA. (The current transmission interval is 40 msec.)

4-4. Monitor output

When the [DIAL MODE] switch is set to "T" (Tone), the states of the input pins below can be monitored by sending dial data at 500 msec intervals.

Monitor output input pins

SQ DET (IC501㉒ pin) H : SQ present

CHARGR DET (IC501⑦ pin) L : Charge On

Output data

SQ DET (IC501㉒ pin)	CHARGE DET (IC501⑦ pin)	DIAL DATA
H	H	8
L	L	1

4-5. LINE 1/LINE 2 connection switching

During the wireless test, the LINE 1/LINE 2 connection can be switched by switching the Test L1/L2 port (IC501⑲ pin) high/low.

If low is detected during LINE 1 connection, the connection switches to LINE 2. If high is detected during LINE 2 connection, the connection switches to LINE 1.

4-6. During the wireless test, 4-1 to 4-5 above are constantly monitored.

4-7. SQ detection display

When the [DIAL MODE] switch is set to "P" (Pulse), the [LINE 2] LED is on when there is SQ and is off when there is no SQ.

HANDSET UNIT

1. How to enter the Test Mode

1-1. Manual Test Mode

Enter the test mode by pressing [TALK] key while pressing [4] and [8] when in idle condition.

The RINGER will ring for 500msec when the test mode is started.

In 25channel mode, all the LEDs are blinked synchronized with the ringer ringing (40 msec on/off). Transmission is switched on/off with 1CH and the machine goes into the test mode command wait state.

During test mode, the [BATT LOW] LED is lit.

<How to Release the Test Mode>

Cancel the test mode by ececuting any of following :

- Press the [FLASH] key
- Turn OFF the power. (Remove the battery and replace them)

1-2. Machine Test Mode

Set TEST-I/O port (IC801 ⑮ pin) to H and turn on power. Until VDET-ON terminal is set to L, if the TEST-I/O terminal is at H, channel setting and TX-ON/OFF setting is carried out.

- Channel setting, TX-ON/OFF setting

When the VDET-ON terminal is at H, the DIP SW condition is input to the key matrix ROW side.

DIP SW Contents :

ROW1 (P40 : IC801 ⑪ pin) = Test CH0 (Sets the channel number within each group)

ROW2 (P41 : IC801 ⑫ pin) = Test CH1 (Sets the channel number within each group)

ROW3 (P42 : IC801 ⑬ pin) = Test CH2 (Sets the channel number within each group)

ROW4 (P43 : IC801 ⑭ pin) = Test CH3 (Sets the channel number within each group)

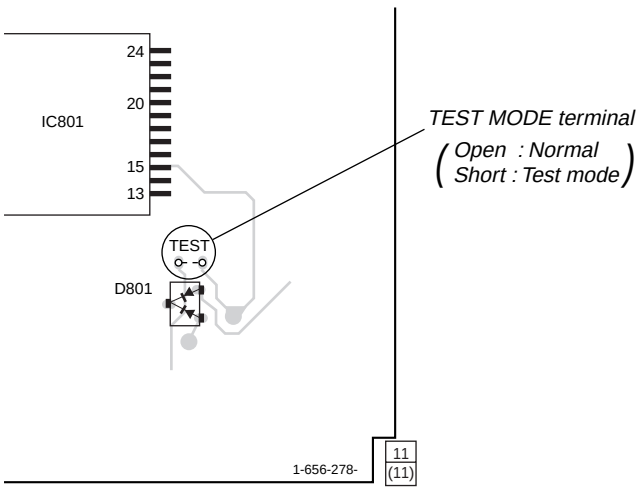
ROW5 (PC0 : IC801 ㉗ pin) = Test GP (Group setting.0 : Group 1, 1 : Group 2)

ROW6 (PC1 : IC801 ㉘ pin) = Test TX (TX ON/OFF setting.0 : TX OFF, 1 : TX ON)

ROW7 (PC2 : IC801 ㉙ pin) = undefined

ROW8 (PC3 : IC801 ㉚ pin) = undefined

[HAND MAIN BOARD] (Component Side)



<How to Release the Test Mode>

1) Turn off the power.

2) Remove the short plug and turn on the power.

1-3. Channel Setting

- During startup in machine test mode, make the following channel settings by loading the terminal input data.
- Pressing the [CHANNEL] key in manual test mode switches one by one through the channels starting with channel 1.

Pin No. / Channel	㉗ ROW 5	⑭ ROW 4	⑬ ROW 3	⑫ ROW 2	⑪ ROW 1	RX FREQUENCY (MHz)	TX FREQUENCY (MHz)
CH1	H	H	H	H	H	43.720	48.760
CH2	L	H	H	H	H	43.740	48.840
CH3	H	H	H	H	L	43.820	48.860
CH4	L	H	H	H	L	43.840	48.920
CH5	H	H	H	L	H	43.920	49.020
CH6	L	H	H	L	H	43.960	49.080
CH7	H	H	H	L	L	44.120	49.100
CH8	L	H	H	L	L	44.160	49.160
CH9	H	H	L	H	H	44.180	49.200
CH10	L	H	L	H	H	44.200	49.240
CH11	H	H	L	H	L	44.320	49.280
CH12	L	H	L	H	L	44.360	49.360
CH13	H	H	L	L	H	44.400	49.400
CH14	L	H	L	L	H	44.460	49.460
CH15	H	H	L	L	L	44.480	49.500
CH16	L	H	L	L	L	46.610	49.670
CH16	H	L	H	H	H	46.610	49.670
CH17	H	L	H	H	L	46.630	49.845
CH18	L	L	H	H	H	46.670	49.860
CH19	L	L	H	H	L	46.710	49.770
CH19	H	L	H	L	H	46.710	49.770
CH20	L	L	H	L	H	46.730	49.875
CH21	H	L	H	L	L	46.770	49.830
CH22	L	L	H	L	L	46.830	49.890
CH23	H	L	L	H	H	46.870	49.930
CH23	L	L	L	H	H	46.870	49.930
CH24	H	L	L	H	L	46.930	49.990
CH24	L	L	L	H	L	46.930	49.990
CH25	H	L	L	L	H	46.970	49.970
CH25	L	L	L	L	H	46.970	49.970
TEST3	H	L	L	L	L	46.800	48.910
TEST4	L	L	L	L	L	46.900	49.950

2. Key Processing

Aside from changing channels, setting is done with [12key] and [#] .

When keys other than the valid keys shown below are pressed, an error tone is initiated and a test mode command waiting condition is entered.

Pressing the [TALK] key while using test mode, returns the operation to the initial test and sets to command standby.

① [CHANNEL] : Press key to carry out channel increment.
The channel increment is carried out in 25-channel mode.

② [0]→[#] : HAND external line call condition.
TX is turned on to enter external line call condition.

③ [1]→[#] : Message reception test.
If 1 data is received 10 times in a row, the [LINE 2] LED lights up. After such data is received, the LED stays on until the machine shifts to test mode command wait.

④ [2]→[#] : Telegraphic Message Send Out Test.
The command frame is transmitted continuously. (ID = 3AA, DATA = AAA)

⑤ [3]→[#] : Telegraphic Message Send/Receive Test : Port condition f)
If the same message as the transmitted message (ID=3AA, Data=AAA) is received normally from the base, the [LINE 1] LED lights up. After such data is received, the LED stays on until the machine shifts to test mode command wait.
If [TALK] key is pressed, the mode is canceled.

⑥ [4]→[#] : SQ Detection Test.
When SQ is present : [LINE 1] LED is lit.
When SQ is absent : [LINE 1] LED is off.

⑦ [5]→[#] : Measurement of consumed power (1).
The output port condition is set to receive condition at time of intermittent reception.
The mode is canceled with [TALK] key.

⑧ [6]→[#] : Measurement of consumed power (2) .
MODE SW = at [RING ON]
Halt condition at time of intermittent reception is entered.
If a key that can start from HALT mode is pressed, the mode is canceled.
MODE SW = at [BATT–SAVE]
HOLD mode is moved to.
If the MODE SW is switched to RING ON, the mode is

canceled. (Since WAKE UP may not be carried out because when DIP SW interferes when making key input …)
Starting with key input is enabled.

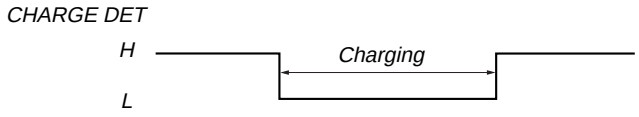
⑨ [7]→[#] : Key & LED Test.
LED all lit → [TALK] → [LINE 1] → [LINE 2] → [BATT LOW] LED off→ Dial Key [1 - #] → Center [LINE 1] LED off → [REDIAL/PAUSE] →[PGM] → [CHANNEL] →[SPEED DIAL] →[HOLD]→[CONF]→ [FLASH] → [BATT CHECK] → [LINE 2] LED OFF turned off and completion sound made.
If the order of the key input is wrong, an error tone will be initiated and the mode will be canceled.

⑩ [8]→[#] : Charge Detection
CHARGE DET terminal condition is output with [BATT LOW] LED.
H : off
L : lit

⑪ [9]→[#] : Battery remaining display.
The amount of battery charge remaining is displayed by three LEDs.

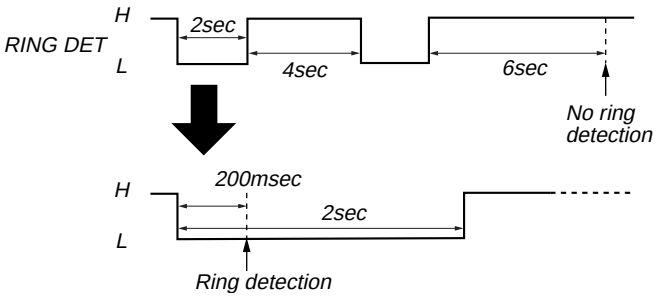
DETECTION TIMING

1. Charge detection



- When the handset microcomputer and base microcomputer CHG DET (charge detection) are both low, charging is underway.
- Handset chattering is eliminated for both high → low and low → high (50 msec on/off for determination).
- During CPU operation, the handset charge is constantly detected.
  (For halts and holds, the mode is forcibly ended, so the charge is detected after the mode ends.)

2. Ring detection

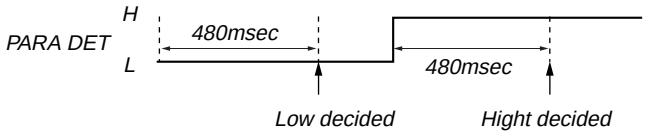


Base unit
- The CPU monitors the ring detection port and if it detects the ring for more than 200 msec, judges that a call is coming in on the outside line.
- After this is detected, the LINE ring on/off message is sent to the handset matched with the ringing interval.
- The interval on/off is decided when either state is detected continuously for 40 msec.
- The base LINE LED blinks synchronized with the ringing.
- When the ring detection port is detected off for 6 seconds continuously, there is judged to be no incoming call.
- When it is judged that there is no incoming call, the messages to the handset are stopped.

Handset unit
- When the LINE ring on/off message is received from the base, the handset blinks the ringing on the handset LINE LED and buzzes the buzzer according to the message.
- Each time the line ring on/off message is received from the base, the line ring on/off check message is transmitted.

3. Automatic hold release

- During an outside line hold, taking the telephone set connected in parallel off-hook ends the outside line hold and releases the outside line.
- Release detection



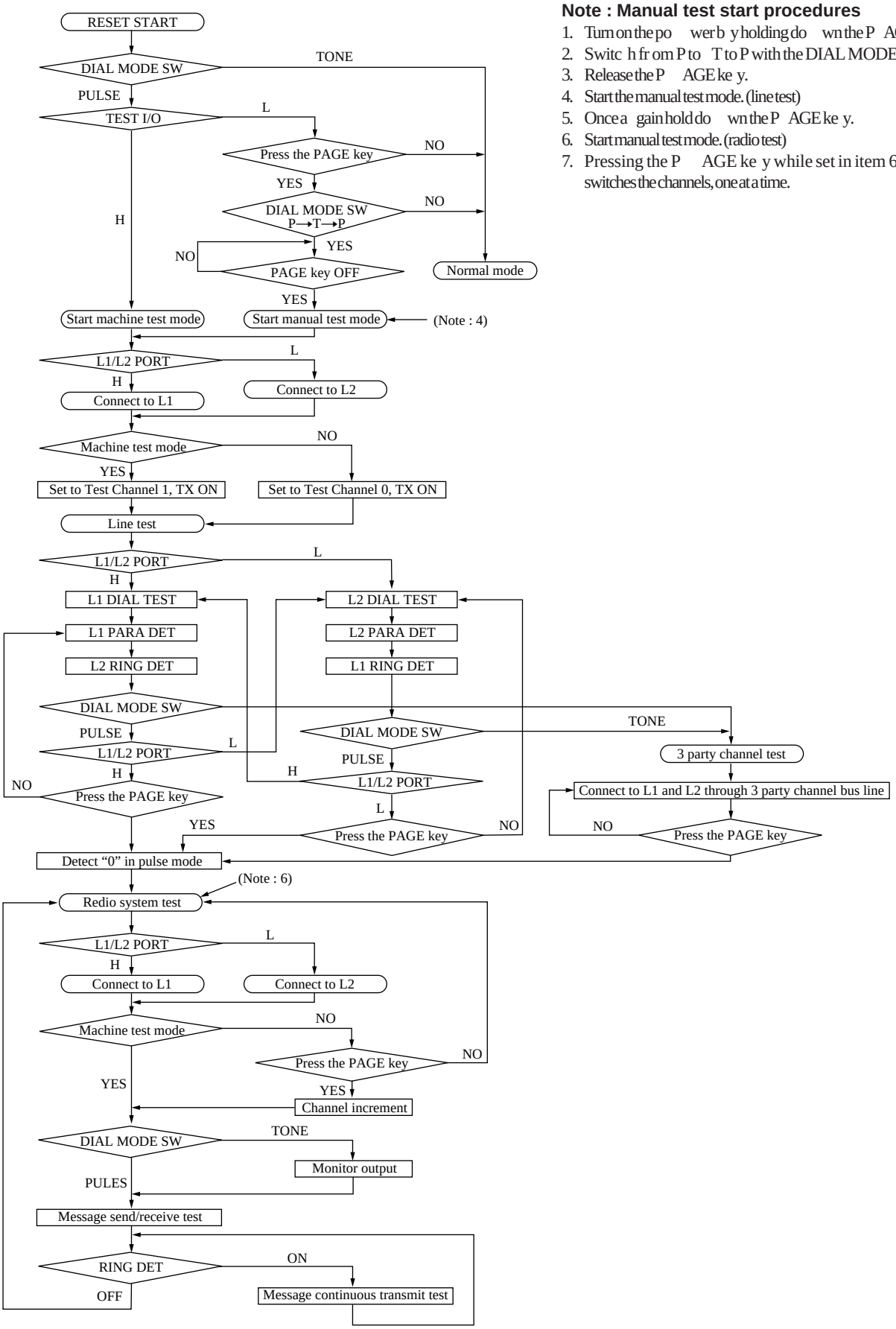
Base unit

- During a Line n♣ hold, the parallel connection telephone off–hook detection port is monitored constantly and when it is determined to be high (off-hook detected), Line n♣ is released, the base Line n♣ LED goes out, and the Line idle shift message is transmitted.
- During Line n♣hold/Line n♣' communication, the Line n♣ idle shift message is transmitted during communication and established with back and forth and a half protocol.
  ♣ (n=1 or 2)

Handset unit

- Reception of the Line idle shift message puts out the handset Line LED.

SECTION 4
BASE UNIT TEST MODE STATUS FLOW CHART



Note : Manual test start procedures

1. Turn on the power by holding down the PAGE key.
2. Switch from P to T to P with the DIAL MODE switch.
3. Release the PAGE key.
4. Start the manual test mode. (line test)
5. Once again hold down the PAGE key.
6. Start manual test mode. (radio test)
7. Pressing the PAGE key while set in item 6 above, switches the channels, one at a time.

SECTION 5
ELECTRICAL ADJUSTMENTS

5-1. BASE UNIT SECTION

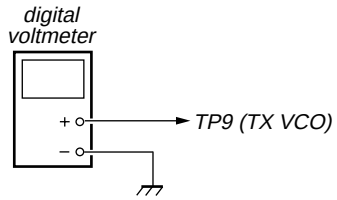
- Apply 9V dc from regulated DC power supply.
- Set to baseunit manual test mode. (Refer to page 11.)
- Switch position :
  DIAL MODE : P (Pulse)

TX Section Adjustment

- Perform the adjustments at 25CH (46.970MHz) as a rule.

1. TX VCO Adjustment

Setting :



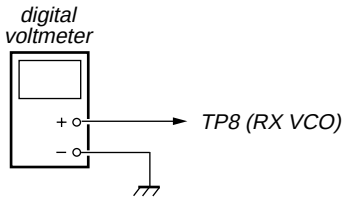
Procedure :

① The digital voltmeter connected TP9 (TX VCO) to GND.
② Adjust the L102 for 0.9 to 1.1V reading on the digital voltmeter.

Adjustment Location : Base main board (see page 21)

2. RX VCO Adjustment

Setting :



Procedure :

① The digital voltmeter connected TP8 (RX VCO) to GND.
② Adjust the L2 for 0.9 to 1.1V reading on the digital voltmeter.

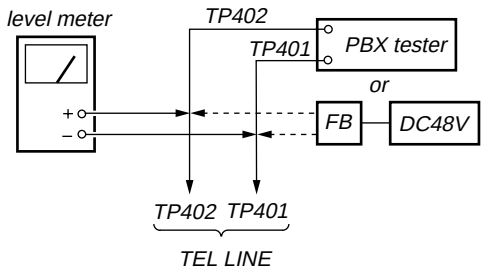
Adjustment Location : Base main board (see page 21)

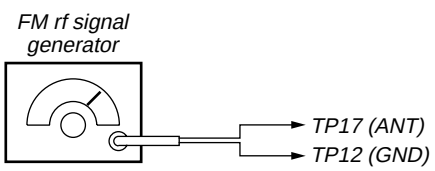
RX Section Adjustment

- Perform the adjustment at T1CH (RX : 48.970MHz) as a rule.

1. DET Adjustment

Setting :





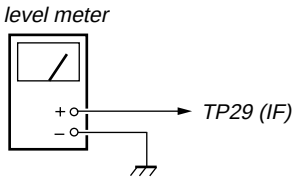
Procedure :

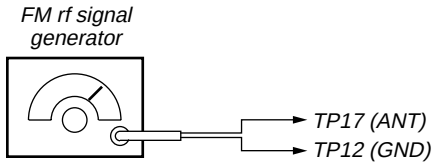
① FM rf signal generator condition :
  Carrier frequency : 48.970MHz
  Modulation frequency : 1kHz
  Deviation : 3kHz
  Output level : 60dBµV (1mV) (EMF)
② Adjust the L4 for the maximum reading on the level meter.

Adjustment Location : Base main board (see page 21)

2. IF Adjustment

Setting :





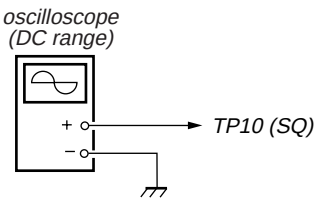
Procedure :

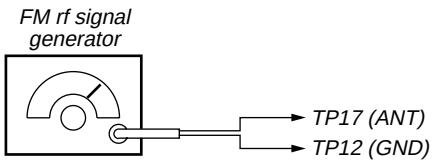
① FM rf signal generator condition :
  Carrier frequency : 48.970MHz
  Modulation frequency : 1kHz
  Deviation : 3kHz
  Output level : –6dBµV (0.501µV) (EMF)
② Adjust the L3 for the noise level to minimum reading on the level meter.

Adjustment Location : Base main board (see page 21)

3. SQ SENSITIVITY Adjustment

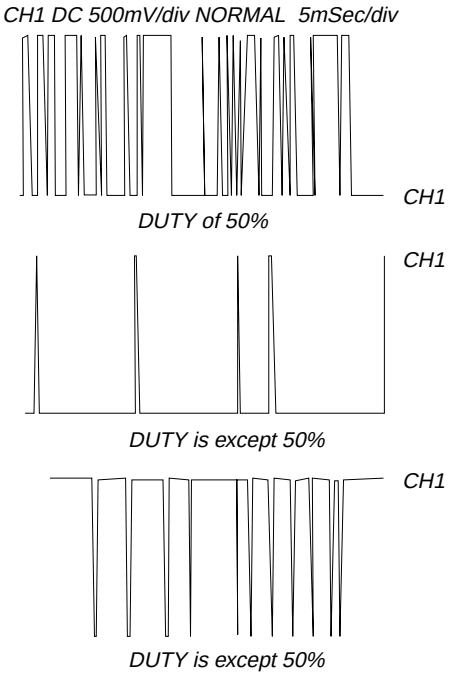
Setting :





Procedure :

① FM rf signal generator condition :
  Carrier frequency : 48.970MHz
  Modulation frequency : 1kHz
  Deviation : 3kHz
  Output level : –6dBµ V (0.501µV) (EMF)
② Adjust the RV601 so that the waveform appearing on the oscilloscope has a duty of 50%.
  (Since the waveform is not accurately observed, adjust so that the top and bottom retrace lines are in the same condition.)



Adjustment Location : Base main board (see page 21)

5-2. HANDSET SECTION

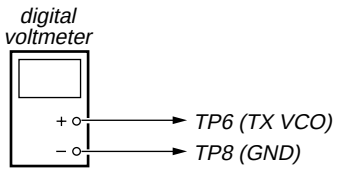
- Apply 4V dc from regulated DC power supply.
- Set to handset manual test mode. (Refer to page 14.)

TX Section Adjustment

1. TX VCO Adjustment

- Perform the adjustments at 25CH (49.970MHz) as a rule.

Setting :



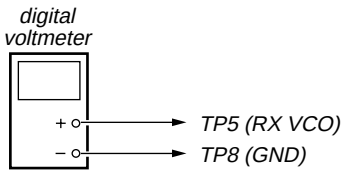
Procedure :

① The digital voltmeter connected TP6 (TX VCO) to TP8 (GND).
② Adjust the L51 for 1.95 to 2.05V reading on the digital voltmeter.

Adjustment Location : Hand main board (see page 21)

2. RX VCO Adjustment

Setting :



Procedure :

① The digital voltmeter connected TP5 (RX VCO) to TP8 (GND).
② Adjust the L201 for 2.25 to 2.35V reading on the digital voltmeter.

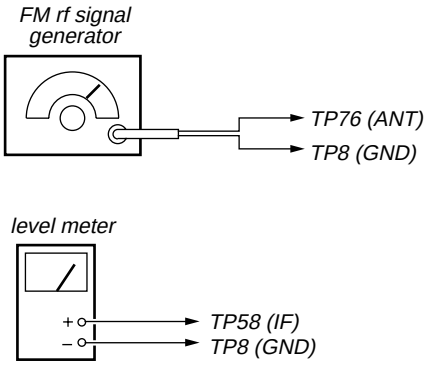
Adjustment Location : Hand main board (see page 21)

RX Section Adjustment

- Perform the adjustment at T3CH (RX : 46.800MHz) as a rule.

1. IF Adjustment

Setting :



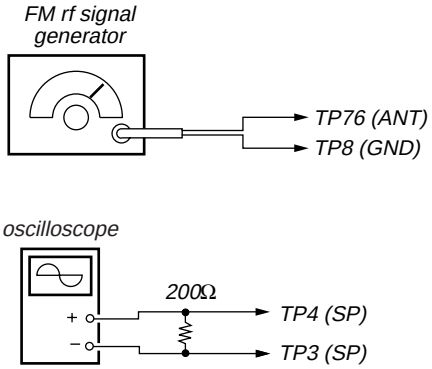
Procedure :

① FM rf signal generator condition :
Carrier frequency : 46.800MHz
Modulation : 1kHz
Deviation : 3kHz
Output level : –5dBμV (0.562μ V) (EMF)
② Adjust the T202 for the minimum or the –28dBV reading on the Level meter.

Adjustment Location : Hand main board (see page 21)

2. DET Adjustment

Setting :

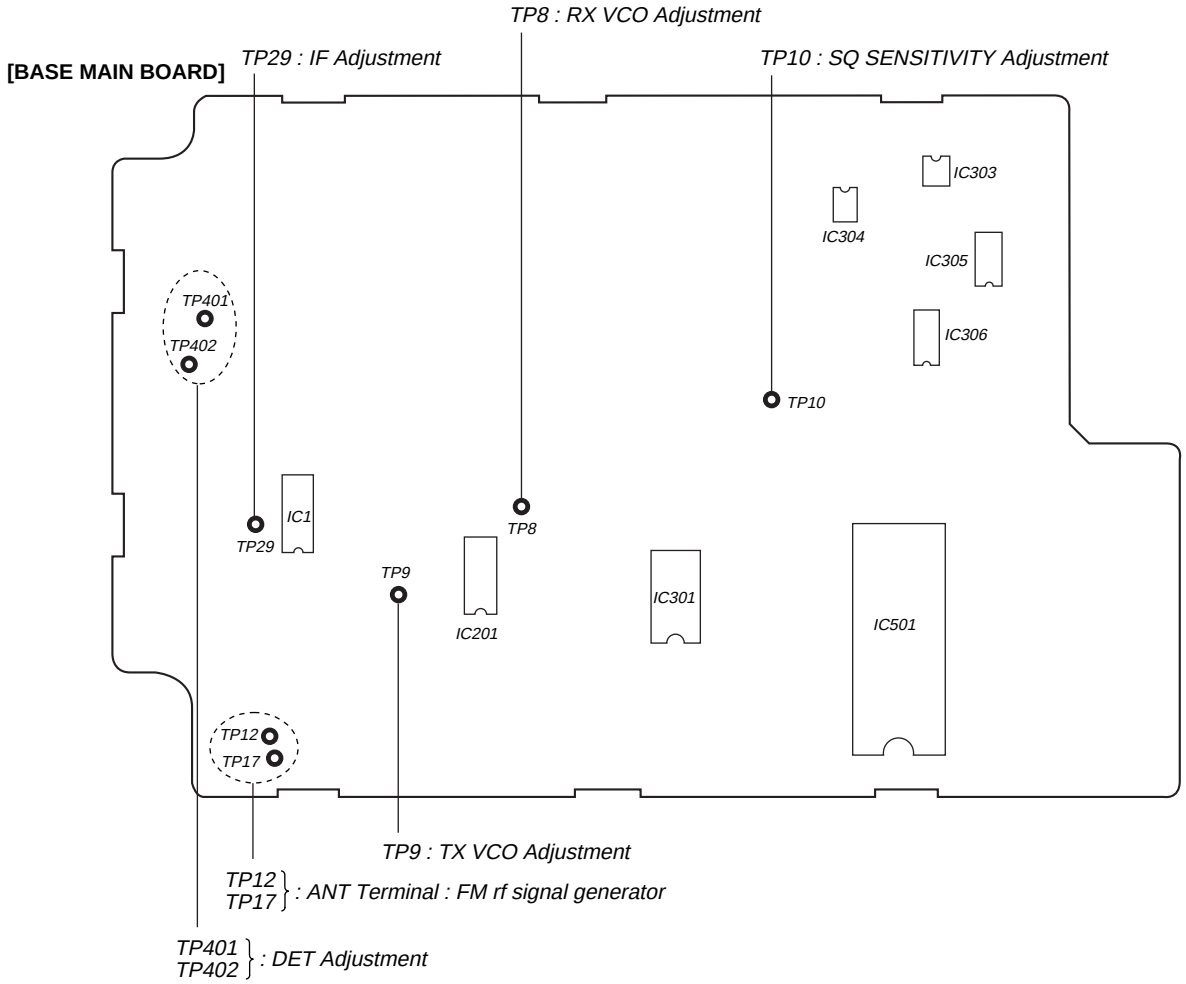


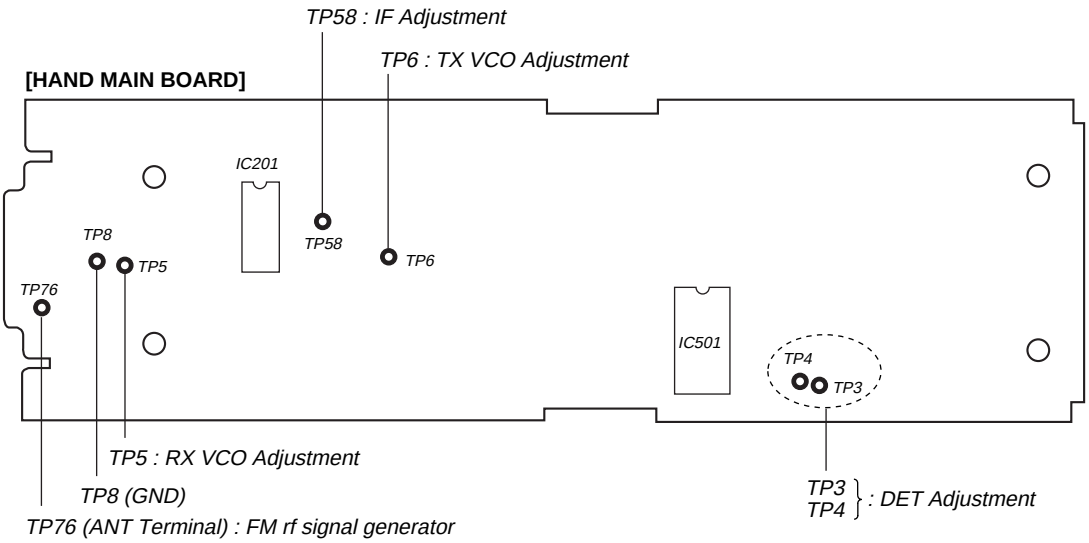
Procedure :

① FM rf signal generator condition :
Carrier frequency : 46.800MHz
Modulation frequency : 1kHz
Deviation : 3kHz
Output level: 60dBμ V (1mV) (EMF)
② Adjust the T201 for the maximum reading on the Oscilloscope.

Adjustment Location : Hand main board (see page 21)

Adjustment Location :





SECTION 6
DIAGRAMS

6-1. EXPLANATION OF IC TERMINALS

IC501 SB662312A-4G69 (BASE UNIT CPU)

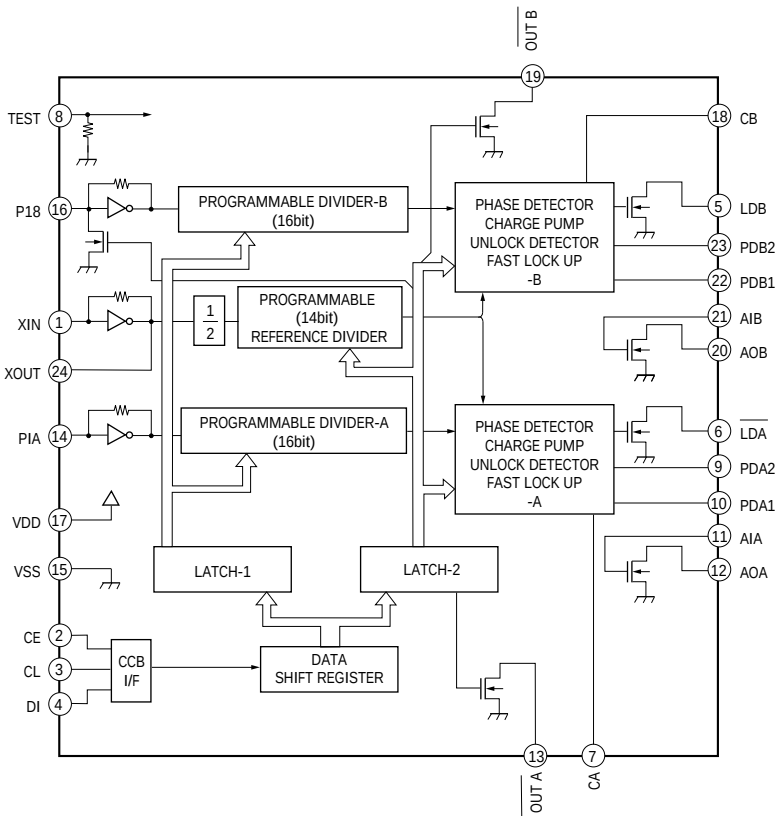
Pin No.	Pin name	I/O	Description
1	PLL LDA	I	PLL LDA. H : Lock
2	PLL DATA	O	PLL serial data output terminal.
3	PLL CLK	O	PLL serial clock output terminal.
4	RX • DATA	I	RX data input terminal.
5	PLL CE	O	PLL serial chip enable output terminal.
6	TX • DATA	O	TX data input terminal.
7	CHG • DET	I	Charge DET terminal. L : Charge on
8	V_{SS}	–	Ground.
9	OSC 1	I	Internal oscillator (4.048MHz).
10	OSC 2	O	External oscillator (4.048MHz).
11	V_{DD}	–	Power supply (+5V).
12	$\overline{RES}$	I	System reset terminal.
13	PAGE	I	Page key detection terminal. L : Page key on
14	DIAL MODE	I	Dial key detection terminal. H : Tone, L : Pulse
15	———	–	Not used.
16	$\overline{HOLD}$	I	Power interruption detection. L : Hold
17	TX/RX MUTE	O	TR/RX mute output.
18	TEST I/O	I	Test mode terminal. H : Test mode
19	TEST L1/L2	I	L1/L2 selection. H : L1, L : L2
20	10CH/25CH	I	10CH/25CH selection. H : 10CH, L : 25CH
21	33/40%	I	Make selection. H : 33%, L : 40%
22	SQ	I	Carrier detection. H : Carrier present
23	$\overline{BATT\ LOW}$	I	Not used (OPEN).
24	———	–	Not used (OPEN).
25	BEEP	O	Beep output terminal.
26	DP • 1	O	Relay (RY451) ON/OFF control. L : LINE 1 connected
27	DTMF	O	DTMF output terminal.
28	DP • 2	O	Relay (RY401) ON/OFF control. L : LINE 2 connected
29	———	–	Not used (OPEN).
30	———	–	Not used (OPEN).
31	PARA • DET2	I	Automatic hold cancellation detect terminal (LINE 2). H : Hold cancellation det
32	PARA • DET1	I	Automatic hold cancellation detect terminal (LINE 1). H : Hold cancellation det
33	RING • DET2	I	Reception bell signal detection. L : Reception signal present
34	RING • DET1	I	Reception bell signal detection. L : Reception signal present
35	LINE2	O	Line 2 LED drive. L : LED lighting
36	LINE1	O	Line 1 LED drive. L : LED lighting
37	DTMF2	O	DTMF ON/OFF control (LINE 2). H : ON
38	DTMF1	O	DTMF ON/OFF control (LINE 1). H : ON
39	CONF	O	CONF ON/OFF control. H : ON
40	L2	O	LINE 2 ON/OFF control. H : ON
41	L1	O	LINE 1 ON/OFF control. H : ON
42	———	–	Not used (OPEN).

IC801 SH665316A-4G70 (HANDSET CPU)

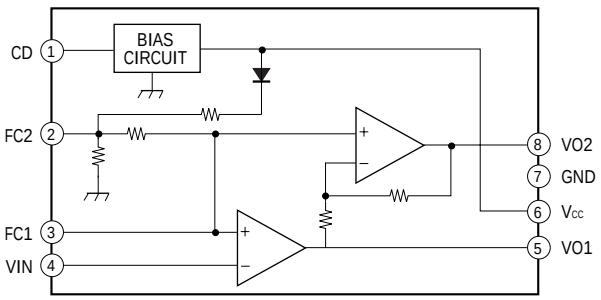
Pin No.	Pin name	I/O	Description
1	BEEP	O	Beep output terminal.
2	V_{SS}	–	Ground.
3	OSC1	I	Internal oscillator. 4.048MHz.
4	OSC2	O	External oscillator. 4.048MHz.
5	V_{DD}	–	Power supply terminal (+4V).
6	$\overline{\text{RESET}}$	I	Reset. L : Reset
7	XT1	I	Oscillator terminal (32kHz).
8	XT2	O	Oscillator terminal (32kHz).
9	TEST	–	Test (V_{SS}).
10	$\overline{\text{HOLD}}$	I	Power interruption detection. H : Hold
11 – 14	ROW 1–4	O	Key output terminal.
15	(TEST IO)	I/O	Test terminal. H : Test mode
16	COL1	I	Key input terminal.
17	COL2	I	Key input terminal.
18	KEYINT. COL3	I	Key input terminal.
19	$\overline{\text{L2 LED}}$	O	LINE 2 LED control. Lighting : L, No light : H
20	$\overline{\text{LED}}$	O	LOW LED control. Lighting : L, No light : H
21	$\overline{\text{L1 LED}}$	O	LINE 1 control. Lighting : L, No light : H
22	$\overline{\text{PLL LDA}}$	I	PLL serial output terminal.
23	———	–	Not used (OPEN).
24	PLL CLK	O	PLL serial clock output terminal.
25	PLL DI	O	PLL serial data output terminal.
26	PLL CE	O	PLL serial chip enable output terminal.
27 – 30	ROW5 – 8	O	Key output terminal.
31	10CH/25CH	I	10CH/25CH auto scanning mode select. H : 10CH, L : 25CH
32	$\overline{\text{BATT LOW}}$	I	Battery low level detection. L : Battery Low
33	VREG	O	Regulator output.
34	SQ DET	I	Carrier detection. H : Carrier present
35	$\overline{\text{VDET ON}}$	O	Voltage detection terminal.
36	CHG DET	I	Charge detection terminal. L : Charge ON DET
37	$\overline{\text{P. VCC ON}}$	O	P. VCC control.
38	BEEP ATT	O	Beep attenuator control terminal.
39	$\overline{\text{TX MUTE}}$	O	TX mute output.
40	$\overline{\text{RX MUTE}}$	O	RX mute output.
41	MODE SW. R/B	I	RING/BATT SAVE mode detection.
42	(TEST CLK)	I/O	Test CLK terminal.
43	$\overline{\text{RX +B}}$	O	RX +B control.
44	(ROM IO)	I/O	EPPROM I/O. (Not used)
45	(ROM SK)	O	EPPROM SK. (Not used)
46	RX DATA	I	RX data input terminal.
47	BATT DET	I	Battery Low level detection.
48	TX DATA	O	TX data output terminal.

● IC BLOCK DIAGRAMS

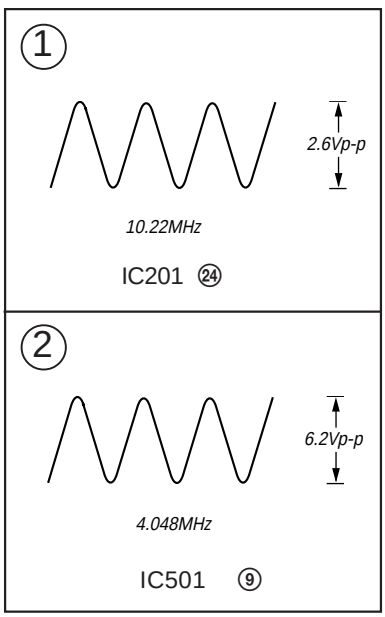
IC201 LC7152M (BASE)
IC301 LC7152M (HAND)



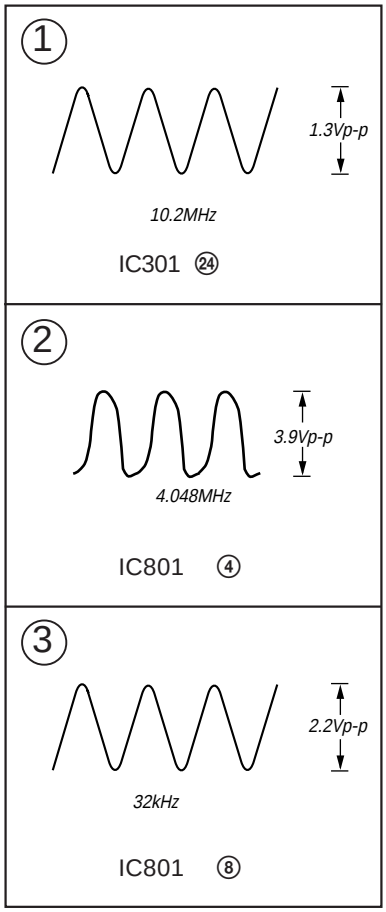
IC303 XR-T65119CD (BASE)



● WAVEFORMS



● **WAVEFORMS**


1
1.3Vp-p
10.2MHz
IC301 ㉔
2
3.9Vp-p
4.048MHz
IC801 ④
3
2.2Vp-p
32kHz
IC801 ⑧

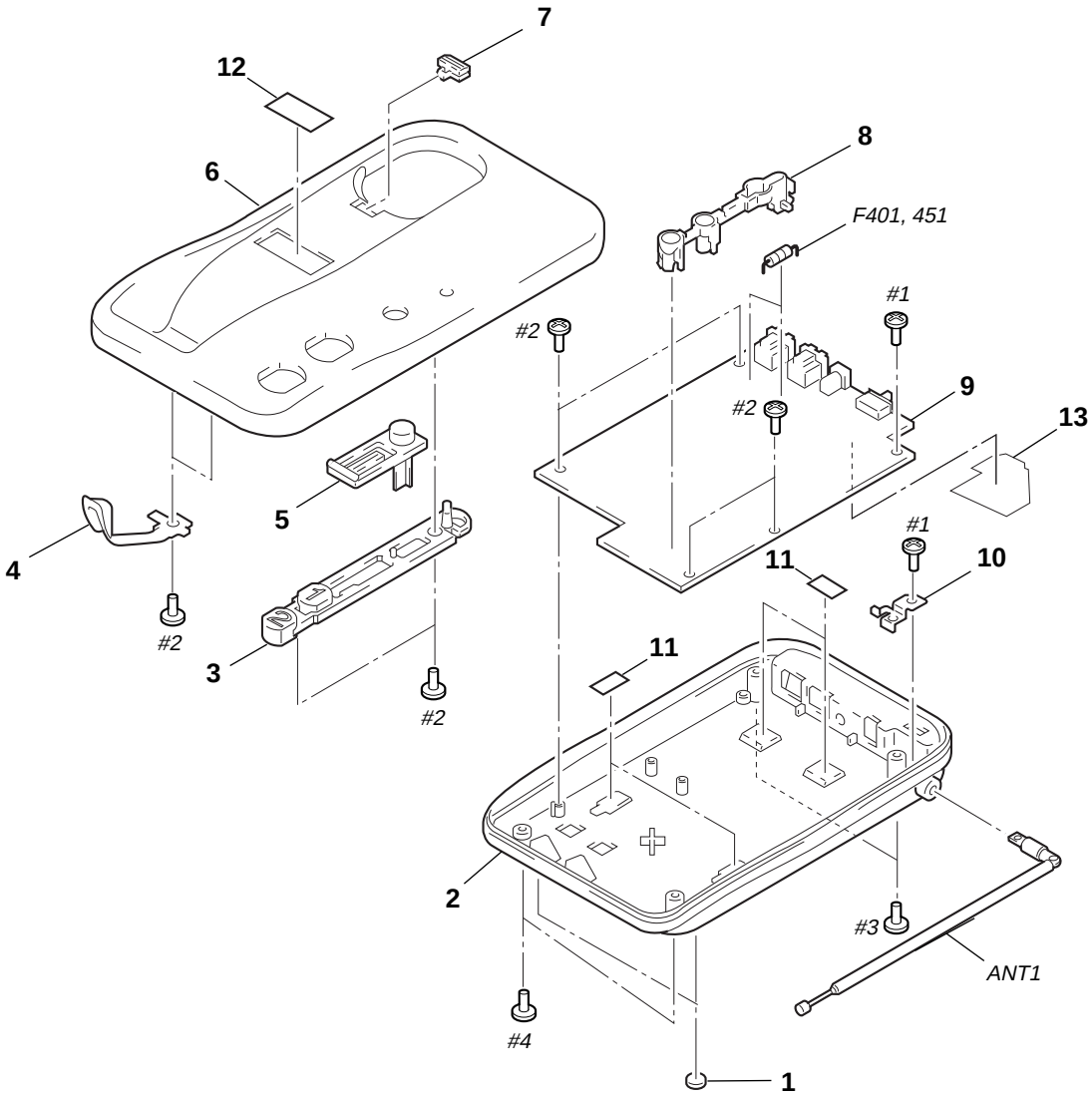
SECTION 7
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

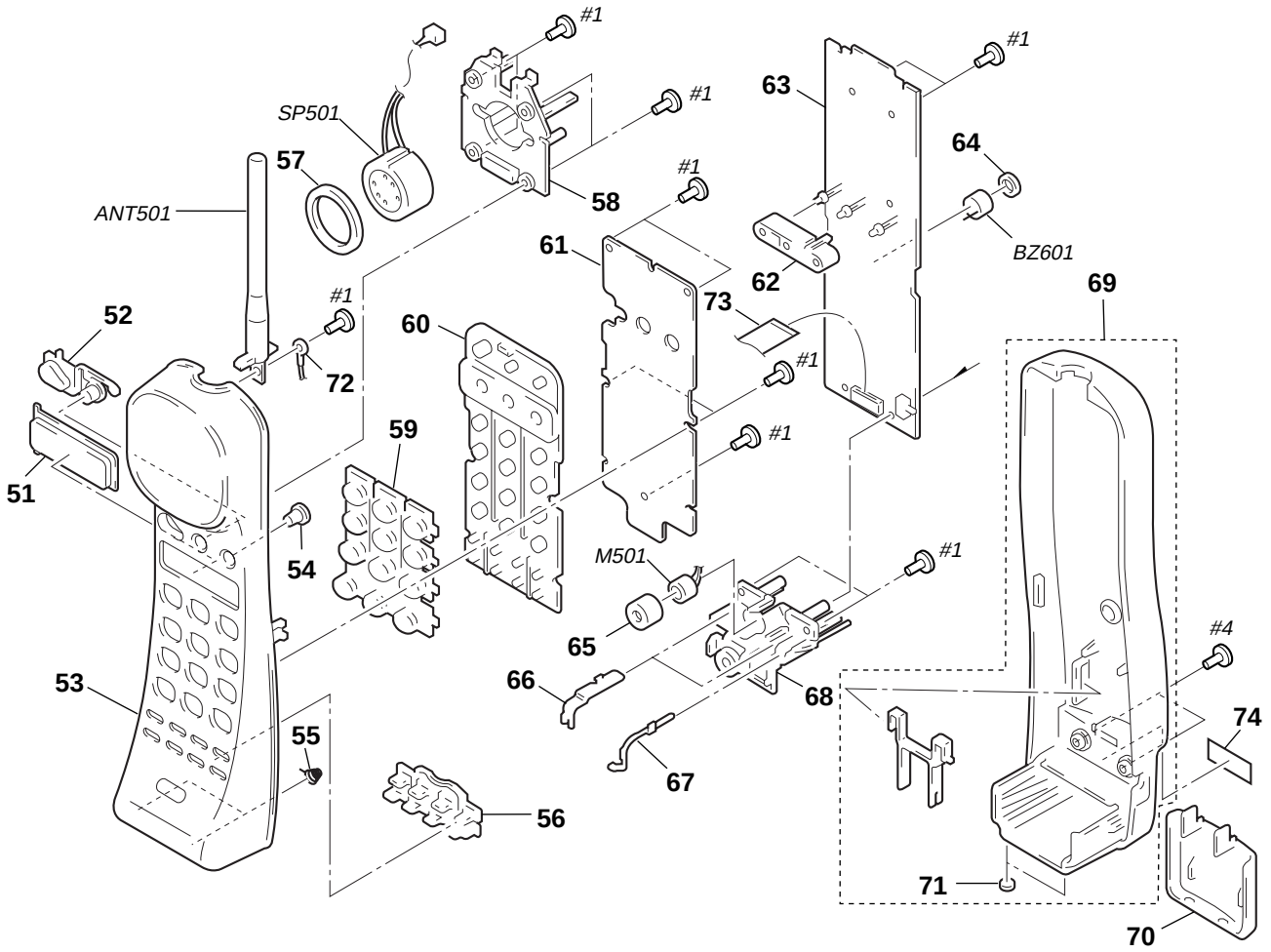
7-1. BASE UNIT SECTION



Ref. No.	Part No.	Description	Remark
1	3-570-903-21	LEG (B), RUBBER	
2	3-928-238-01	CABINET (LOWER)	
3	3-928-240-01	LENS	
4	3-925-009-11	TERMINAL (CHARGE)	
5	3-928-239-01	BUTTON (PAGE)	
6	3-928-237-01	CABINET (UPPER)	
7	3-925-006-01	HOOK (WALL HOOK)	
8	3-928-241-01	HOLDER (LED)	

Ref. No.	Part No.	Description	Remark
* 9	A-3622-154-A	BASE MAIN BOARD, COMPLETE	
10	3-914-709-11	BRACKET (BASE), ANTENNA	
* 11	3-932-771-01	SHEET	
12	3-928-772-01	LABEL (TERMINAL CAUTION)	
* 13	3-928-730-01	PLATE, SHIELD	
ANT1	1-501-704-11	ANTENNA, TELESCOPIC	
⚠F401	1-533-542-11	FUSE (500mA/250V)	
⚠F451	1-533-542-11	FUSE (500mA/250V)	

7-2. HANDSET SECTION



Ref. No.	Part No.	Description	Remark
51	3-915-616-31	WINDOW	
52	3-915-615-01	BUTTON (TALK/LINE 1)	
53	3-914-687-91	CABINET (FRONT) (1)	
54	3-915-619-31	BUTTON (LINE 2)	
55	3-011-284-01	SPRING(B), COIL	
56	3-915-617-01	BUTTON (FUNCTION)	
57	3-372-738-01	GASKET (RECEIVER)	
58	3-915-614-01	HOLDER (RECEIVER)	
59	3-915-618-01	BUTTON (12 KEY)	
60	1-762-059-11	SWITCH, RUBBER KEY (HAND 1)	
* 61	1-659-134-11	HAND KEY BOARD	
62	3-915-620-01	HOLDER (LED)	
* 63	A-3672-050-A	HAND BOARD, COMPLETE	
* 64	3-384-116-01	CUSHION (BZ)	

Ref. No.	Part No.	Description	Remark
65	3-918-133-01	CUSHION (MICROPHONE)	
66	3-918-132-01	TERMINAL, BATTERY	
67	3-914-699-11	TERMINAL (CHARGE), CHARGE	
68	3-915-621-01	HOLDER (MICROPHONE)	
69	X-3369-851-1	CABINET (REAR)ASSY	
70	3-915-612-01	COVER (BATTERY)	
71	3-370-982-01	FOOT (H), RUBBER	
72	1-765-461-11	CORD, CONNECTION	
73	1-765-612-11	WIRE, JUMPER	
74	3-930-182-01	LABEL (BATTERY CAUTION)	
ANT501	1-501-703-11	ANTENNA, HELICAL	
BZ601	1-544-603-11	BUZZER	
M501	1-542-161-11	MICROPHONE, ELECTRET CONDENSER	
SP501	1-504-261-21	SPEAKER (2.8cm)	

SECTION 8
ELECTRICAL PARTS LIST

BASE MAIN

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-3622-154-A	BASE MAIN BOARD, COMPLETE			
		**********			
*	3-928-730-01	PLATE, SHIELD			
		< FILTER >			
BPF1	1-239-916-11	FILTER, BAND PASS			
BPF2	1-239-916-11	FILTER, BAND PASS			
BPF101	1-239-921-11	FILTER, BAND PASS			
		< CAPACITOR >			
C2	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C3	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C4	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C5	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C6	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C7	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C8	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C9	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C10	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C11	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C12	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C16	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C17	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C18	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C19	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C20	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C21	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C22	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C23	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C25	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C26	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C27	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C28	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C37	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C38	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C101	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C102	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C103	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C104	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C105	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C107	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C108	1-163-117-00	CERAMIC CHIP	100PF	5%	50V

Ref. No.	Part No.	Description			Remark
C109	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C110	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C111	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C112	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C113	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C114	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C115	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C116	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C201	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C202	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C204	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C205	1-164-346-11	CERAMIC CHIP	1uF		16V
C206	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C207	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C208	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C209	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C210	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C211	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C301	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C303	1-126-961-11	ELECT	2.2uF	20%	50V
C304	1-124-902-00	ELECT	0.47uF	20%	50V
C305	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C306	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C309	1-124-907-11	ELECT	10uF	20%	50V
C311	1-124-907-11	ELECT	10uF	20%	50V
C312	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C313	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C314	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C315	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C316	1-126-961-11	ELECT	2.2uF	20%	50V
C317	1-126-963-11	ELECT	4.7uF	20%	50V
C320	1-124-443-00	ELECT	100uF	20%	10V
C321	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C322	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C323	1-124-903-11	ELECT	1uF	20%	50V
C324	1-124-903-11	ELECT	1uF	20%	50V
C325	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C326	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C327	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C330	1-124-910-11	ELECT	47uF	20%	50V
C331	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C332	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C333	1-124-910-11	ELECT	47uF	20%	50V

BASE MAIN

Ref. No.	Part No.	Description			Remark
C334	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C335	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C336	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C350	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C351	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C352	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C353	1-124-903-11	ELECT	1uF	20%	50V
C354	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C357	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C370	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C371	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C372	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C375	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C376	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C380	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C381	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C382	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C383	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C384	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C385	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C386	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C390	1-124-910-11	ELECT	47uF	20%	50V
C391	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C392	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C393	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C394	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C395	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C396	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C397	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C401	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C402	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C403	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C404	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C405	1-136-193-11	FILM	0.47uF	10%	250V
C406	1-162-117-00	CERAMIC	100PF	10%	500V
C407	1-124-910-11	ELECT	47uF	20%	50V
C408	1-126-963-11	ELECT	4.7uF	20%	50V
C409	1-124-907-11	ELECT	10uF	20%	50V
C410	1-126-963-11	ELECT	4.7uF	20%	50V
C411	1-136-015-00	CERAMIC CHIP	0.0033uF	50V	
C451	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C452	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C453	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C454	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C455	1-136-193-11	FILM	0.47uF	10%	250V
C456	1-162-117-00	CERAMIC	100PF	10%	500V
C457	1-124-910-11	ELECT	47uF	20%	50V
C458	1-126-963-11	ELECT	4.7uF	20%	50V
C459	1-124-907-11	ELECT	10uF	20%	50V
C460	1-126-963-11	ELECT	4.7uF	20%	50V
C461	1-136-015-00	CERAMIC CHIP	0.0033uF	50V	
C501	1-124-910-11	ELECT	47uF	20%	50V
C503	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C504	1-104-666-11	ELECT	220uF	20%	10V
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C507	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C551	1-124-910-11	ELECT	47uF	20%	50V

Ref. No.	Part No.	Description			Remark
C602	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C603	1-124-907-11	ELECT	10uF	20%	50V
C604	1-126-941-11	ELECT	470uF	20%	16V
C609	1-126-941-11	ELECT	470uF	20%	16V
C610	1-124-910-11	ELECT	47uF	20%	50V
C611	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C612	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C613	1-124-443-00	ELECT	100uF	20%	10V
C614	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C615	1-124-907-11	ELECT	10uF	20%	50V
C616	1-164-337-11	CERAMIC CHIP	2.2uF		16V
		< FILTER >			
CF1	1-577-070-11	FILTER, CERAMIC			
CF2	1-760-418-11	FILTER, CERAMIC			
		< CONNECTOR >			
* CN602	1-568-951-11	PIN, CONNECTOR 2P			
		< DIODE >			
D1	8-719-055-14	DIODE KV1832CTR3			
D101	8-719-055-14	DIODE KV1832CTR3			
D401	8-719-970-02	DIODE 1SR139-400			
D402	8-719-970-02	DIODE 1SR139-400			
D403	8-719-970-02	DIODE 1SR139-400			
D404	8-719-970-02	DIODE 1SR139-400			
D405	8-719-109-88	DIODE RD5.6ES-B1			
D406	8-719-109-88	DIODE RD5.6ES-B1			
D407	8-719-991-33	DIODE 1SS133T-77			
D408	8-719-160-55	DIODE RD12F-B1			
D409	8-719-991-33	DIODE 1SS133T-77			
D410	8-719-160-55	DIODE RD12F-B1			
D451	8-719-970-02	DIODE 1SR139-400			
D452	8-719-970-02	DIODE 1SR139-400			
D453	8-719-970-02	DIODE 1SR139-400			
D454	8-719-970-02	DIODE 1SR139-400			
D455	8-719-109-88	DIODE RD5.6ES-B1			
D456	8-719-109-88	DIODE RD5.6ES-B1			
D457	8-719-991-33	DIODE 1SS133T-77			
D458	8-719-160-55	DIODE RD12F-B1			
D459	8-719-991-33	DIODE 1SS133T-77			
D460	8-719-160-55	DIODE RD12F-B1			
D501	8-719-057-15	LED EBR3368S-TP-J240K (LINE 2)			
D502	8-719-057-15	LED EBR3368S-TP-J240K (LINE 1)			
D601	8-719-057-15	LED EBR3368S-TP-J240K (CHARGE)			
D606	8-719-991-33	DIODE 1SS133T-77			
D607	8-719-991-33	DIODE 1SS133T-77			
D608	8-719-991-33	DIODE 1SS133T-77			
D609	8-719-991-33	DIODE 1SS133T-77			
		< FUSE >			
⚠F401	1-533-542-11	FUSE (500mA/250V)			
⚠F451	1-533-542-11	FUSE (500mA/250V)			
		< IC >			
IC1	8-759-266-13	IC LA8670M-TLM			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
IC201	8-759-824-20	IC LC7152M	
IC301	8-759-263-90	IC LA8637M-TLM	
IC303	8-759-030-76	IC MC34119-ML	
IC304	8-759-909-71	IC BA4558F	
IC305	8-759-008-67	IC MC14066BF	
IC306	8-759-008-67	IC MC14066BF	
IC501	8-759-369-09	IC SB662312A-4G69	
IC601	8-759-165-04	IC TK11230M	
IC602	8-759-519-46	IC S-80730AN-DT-S	
IC603	8-759-361-69	IC BA17805T	
		< JACK >	
J401	1-770-484-41	JACK, MODULAR (4C) 6P (LINE 2)	
J451	1-766-250-11	JACK, MODULAR (2C) 6P (LINE 1)	
J601	1-573-667-11	JACK, DC (POLAR UNITY TYPE) (DC IN 9V)	
		< JUMPER RESISTOR >	
JR1	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR2	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR3	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR4	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR5	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR6	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR7	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR8	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR10	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR11	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR12	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR13	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR14	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR15	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR16	1-216-296-00	METAL GLAZE 0 5% 1/8W	
		< COIL >	
L1	1-408-959-21	INDUCTOR 1.2uH	
L2	1-409-798-11	COIL, OSC	
L3	1-409-672-11	TRANSFORMER, IF	
L4	1-409-671-11	COIL, IFT	
L5	1-412-255-11	INDUCTOR 0.22uH	
L101	1-412-256-11	INDUCTOR 0.27uH	
L102	1-409-797-11	COIL, OSC	
L401	1-408-970-21	INDUCTOR 10uH	
L402	1-408-970-21	INDUCTOR 10uH	
L451	1-408-970-21	INDUCTOR 10uH	
L452	1-408-970-21	INDUCTOR 10uH	
L601	1-408-970-21	INDUCTOR 10uH	
L602	1-408-970-21	INDUCTOR 10uH	
L603	1-408-970-21	INDUCTOR 10uH	
		< PHOTO INTERRUPTER >	
PH401	8-719-156-72	PHOTO COUPLER PS2501-1KA	
PH402	8-719-156-72	PHOTO COUPLER PS2501-1KA	
PH451	8-719-156-72	PHOTO COUPLER PS2501-1KA	
PH452	8-719-156-72	PHOTO COUPLER PS2501-1KA	
		< TRANSISTOR >	
Q1	8-729-031-85	TRANSISTOR 2SC4365-34-TB	

Ref. No.	Part No.	Description	Remark
Q101	8-729-031-85	TRANSISTOR 2SC4365-34-TB	
Q103	8-729-031-86	TRANSISTOR 2SC3142-J3J4-TB	
Q104	8-729-031-86	TRANSISTOR 2SC3142-J3J4-TB	
Q105	8-729-216-22	TRANSISTOR 2SA1162-G	
Q401	8-729-216-22	TRANSISTOR 2SA1162-G	
Q402	8-729-216-22	TRANSISTOR 2SA1162-G	
Q403	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q406	8-729-032-66	TRANSISTOR 2SC5069-TD	
Q451	8-729-216-22	TRANSISTOR 2SA1162-G	
Q452	8-729-216-22	TRANSISTOR 2SA1162-G	
Q453	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q456	8-729-032-66	TRANSISTOR 2SC5069-TD	
Q602	8-729-807-52	TRANSISTOR 2SD1623-T	
Q603	8-729-807-52	TRANSISTOR 2SD1623-T	
Q604	8-729-230-49	TRANSISTOR 2SC2712-YG	
		< RESISTOR >	
R1	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R2	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R3	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R4	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R6	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R7	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R8	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R9	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R10	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R11	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R12	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R13	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R14	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R15	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R16	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R101	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R104	1-216-037-00	METAL CHIP 330 5% 1/10W	
R105	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R106	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R107	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R108	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R109	1-216-045-00	METAL CHIP 680 5% 1/10W	
R110	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R111	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R112	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R114	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R115	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R117	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R118	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R119	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R201	1-216-033-00	METAL CHIP 220 5% 1/10W	
R202	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R203	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R204	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R206	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R207	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R208	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R209	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R210	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R211	1-216-073-00	METAL CHIP 10K 5% 1/10W	

BASE MAIN

Ref. No.	Part No.	Description			Remark
R304	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R305	1-216-081-00	METAL CHIP	22K	5%	1/10W
R308	1-216-113-00	METAL CHIP	470K	5%	1/10W
R309	1-216-077-00	METAL CHIP	15K	5%	1/10W
R310	1-216-101-00	METAL CHIP	150K	5%	1/10W
R311	1-216-081-00	METAL CHIP	22K	5%	1/10W
R312	1-216-081-00	METAL CHIP	22K	5%	1/10W
R313	1-216-101-00	METAL CHIP	150K	5%	1/10W
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W
R315	1-216-107-00	METAL CHIP	270K	5%	1/10W
R318	1-216-073-00	METAL CHIP	10K	5%	1/10W
R319	1-216-073-00	METAL CHIP	10K	5%	1/10W
R322	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R323	1-216-296-00	METAL GLAZE	0	5%	1/8W
R331	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R332	1-216-045-00	METAL CHIP	680	5%	1/10W
R333	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R334	1-216-101-00	METAL CHIP	150K	5%	1/10W
R335	1-216-081-00	METAL CHIP	22K	5%	1/10W
R336	1-216-081-00	METAL CHIP	22K	5%	1/10W
R337	1-216-081-00	METAL CHIP	22K	5%	1/10W
R338	1-216-081-00	METAL CHIP	22K	5%	1/10W
R339	1-216-085-00	METAL CHIP	33K	5%	1/10W
R340	1-216-073-00	METAL CHIP	10K	5%	1/10W
R341	1-216-085-00	METAL CHIP	33K	5%	1/10W
R342	1-216-081-00	METAL CHIP	22K	5%	1/10W
R343	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R345	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R346	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R347	1-216-093-00	METAL CHIP	68K	5%	1/10W
R351	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R352	1-216-045-00	METAL CHIP	680	5%	1/10W
R353	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R354	1-216-101-00	METAL CHIP	150K	5%	1/10W
R355	1-216-081-00	METAL CHIP	22K	5%	1/10W
R356	1-216-081-00	METAL CHIP	22K	5%	1/10W
R357	1-216-081-00	METAL CHIP	22K	5%	1/10W
R358	1-216-081-00	METAL CHIP	22K	5%	1/10W
R359	1-216-081-00	METAL CHIP	22K	5%	1/10W
R360	1-216-073-00	METAL CHIP	10K	5%	1/10W
R363	1-216-081-00	METAL CHIP	22K	5%	1/10W
R365	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R366	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R370	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R371	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R372	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R375	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R376	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R380	1-216-093-00	METAL CHIP	68K	5%	1/10W
R381	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R383	1-216-081-00	METAL CHIP	22K	5%	1/10W
⚠R401	1-215-877-11	METAL OXIDE	22K	5%	1W F
R402	1-216-025-00	METAL GLAZE	100	5%	1/10W
R403	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R404	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R405	1-216-073-00	METAL CHIP	10K	5%	1/10W
R406	1-216-109-00	METAL CHIP	330K	5%	1/10W
R407	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R408	1-216-113-00	METAL CHIP	470K	5%	1/10W
R409	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R410	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R411	1-216-073-00	METAL CHIP	10K	5%	1/10W
R412	1-249-393-11	CARBON	10	5%	1/4W
⚠R451	1-215-877-11	METAL OXIDE	22K	5%	1W F
R452	1-216-025-00	METAL GLAZE	100	5%	1/10W
R453	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R454	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R455	1-216-073-00	METAL CHIP	10K	5%	1/10W
R456	1-216-109-00	METAL CHIP	330K	5%	1/10W
R457	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R458	1-216-113-00	METAL CHIP	470K	5%	1/10W
R459	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R460	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R461	1-216-073-00	METAL CHIP	10K	5%	1/10W
R462	1-249-393-11	CARBON	10	5%	1/4W
R501	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R502	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R503	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R504	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R505	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R506	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R507	1-216-109-00	METAL CHIP	330K	5%	1/10W
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W
R510	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R511	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R513	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R514	1-216-041-00	METAL CHIP	470	5%	1/10W
R515	1-216-041-00	METAL CHIP	470	5%	1/10W
R516	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R517	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R518	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R522	1-216-073-00	METAL CHIP	10K	5%	1/10W
R523	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R551	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R552	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R553	1-216-113-00	METAL CHIP	470K	5%	1/10W
R601	1-216-041-00	METAL CHIP	470	5%	1/10W
R610	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R611	1-216-037-00	METAL CHIP	330	5%	1/10W
R612	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R613	1-216-073-00	METAL CHIP	10K	5%	1/10W
R614	1-217-671-11	METAL CHIP	1	5%	1/10W
R617	1-216-121-00	METAL GLAZE	1M	5%	1/10W
		< VARIABLE RESISTOR >			
RV1	1-241-767-21	RES, ADJ, CARBON 100K (SQ SENSITIVITY)			
		< RELAY >			
RY401	1-515-773-11	RELAY			
RY451	1-515-773-11	RELAY			
		< SWITCH >			
S501	1-571-977-11	SWITCH, TACTIL (PAGE)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
S502	1-572-903-21	SWITCH, SLIDE (DIAL MODE)			
		< TRANSFORMER >			
T401	1-429-334-21	TRANSFORMER, LINE			
T451	1-429-334-21	TRANSFORMER, LINE			
		< GAP, DISCHARGE >			
VD401	1-533-751-11	GAP, DISCHARGE			
VD451	1-533-751-11	GAP, DISCHARGE			
		< VIBRATOR >			
X201	1-760-325-11	VIBRATOR, CRYSTAL (10.22MHz)			
X501	1-760-324-11	VIBRATOR, CRYSTAL (4.048MHz)			
**********					
*	A-3672-050-A	HAND MAIN BOARD, COMPLETE			
		**********			
	1-765-461-11	CORD, CONNECTION			
	3-915-620-01	HOLDER (LED)			
		< FILTER >			
BPF51	1-239-917-11	FILTER, BAND PASS			
BPF101	1-239-918-11	FILTER, BAND PASS			
BPF102	1-239-918-11	FILTER, BAND PASS			
		< BUZZER >			
BZ601	1-544-603-11	BUZZER			
		< CAPACITOR >			
C51	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C52	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C53	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C54	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C55	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C56	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C57	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C58	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C59	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C60	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C61	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C62	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C63	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C64	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C65	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C69	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C101	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C103	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C104	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C201	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C202	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C203	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C204	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C205	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C206	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C208	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C209	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C210	1-163-157-00	CERAMIC CHIP	10PF	5%	50V
C211	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C213	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C214	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C215	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C216	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C217	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C219	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C220	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C221	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C222	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C223	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C224	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C301	1-163-106-00	CERAMIC CHIP	36PF	5%	50V
C302	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C304	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C305	1-162-638-11	CERAMIC CHIP	1uF		16V
C306	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C308	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C309	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C310	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C311	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C312	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C401	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C402	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C403	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C502	1-124-257-00	ELECT	2.2uF	20%	50V
C503	1-164-346-11	CERAMIC CHIP	1uF		16V
C504	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C505	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C509	1-164-346-11	CERAMIC CHIP	1uF		16V
C510	1-164-346-11	CERAMIC CHIP	1uF		16V
C511	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C512	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C513	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C514	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-124-257-00	ELECT	2.2uF	20%	50V
C516	1-126-163-11	ELECT	4.7uF	20%	50V
C517	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C518	1-162-638-11	CERAMIC CHIP	1uF		16V
C519	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C522	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C524	1-162-638-11	CERAMIC CHIP	1uF		16V
C525	1-164-346-11	CERAMIC CHIP	1uF		16V
C526	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C527	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C529	1-164-346-11	CERAMIC CHIP	1uF		16V
C531	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C532	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C533	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C535	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C537	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C550	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C601	1-126-245-11	ELECT	330uF	20%	6.3V
C801	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C802	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C803	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C804	1-163-231-11	CERAMIC CHIP	15PF	5%	50V

HAND MAIN

Ref. No.	Part No.	Description			Remark
C805	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C806	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C807	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C808	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C820	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C901	1-124-257-00	ELECT	2.2uF	20%	50V
C902	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C903	1-126-163-11	ELECT	4.7uF	20%	50V
C904	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C905	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C908	1-104-396-11	ELECT	10uF	20%	16V
C910	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C911	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C912	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C913	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C920	1-126-245-11	ELECT	330uF	20%	6.3V
C922	1-163-035-00	CERAMIC CHIP	0.047uF		50V
		< FILTER >			
CF201	1-760-338-11	FILTER, CERAMIC			
CF202	1-577-070-11	FILTER, CERAMIC			
		< CONNECTOR >			
* CN502	1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P			
CN801	1-766-455-11	SOCKET, CONNECTOR 11P			
* CN901	1-506-988-11	PIN, CONNECTOR (PC BOARD) 6P			
		< DIODE >			
D51	8-719-055-14	DIODE KV1832CTR3			
D201	8-719-055-14	DIODE KV1832CTR3			
D301	8-719-941-04	DIODE SB007-03CP			
D501	8-719-105-91	DIODE RD5.6M-B2			
D601	8-719-990-39	DIODE DCB010			
D603	8-719-990-39	DIODE DCB010			
D650	8-719-048-89	LED MPR3338S-TP-J167K (LINE 1)			
D651	8-719-048-89	LED MPR3338S-TP-J167K (BATT LOW)			
D652	8-719-048-89	LED MPR3338S-TP-J167K (LINE 2)			
D801	8-719-990-39	DIODE DCB010			
D802	8-719-990-39	DIODE DCB010			
D902	8-719-022-14	DIODE UZM-13B			
D903	8-719-941-04	DIODE SB007-03CP			
		< IC >			
IC201	8-759-266-13	IC LA8670M-TLM			
IC301	8-759-824-20	IC LC7152M			
IC401	8-759-197-71	IC TK11227M			
IC501	8-759-263-90	IC LA8637M-TLM			
IC801	8-759-369-08	IC SH665316A-4G70			
IC901	8-759-354-08	IC LA5619M-TLM			
IC902	8-759-514-72	IC S-80725AL-AN-T1			
IC903	8-759-998-74	IC RH5VA33CC			
IC910	8-759-031-84	IC SC7S04F			
		< JUMPER RESISTOR >			
JR1	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR2	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR3	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR4	1-216-296-00	METAL GLAZE	0	5%	1/8W

Ref. No.	Part No.	Description			Remark
JR5	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR6	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR7	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR8	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR501	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR502	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR601	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR602	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR923	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR926	1-216-295-00	METAL GLAZE	0	5%	1/10W
		< COIL >			
L51	1-409-673-11	COIL, OSC			
L53	1-412-255-11	INDUCTOR	0.22uH		
L101	1-408-960-21	INDUCTOR	1.5uH		
L102	1-408-959-21	INDUCTOR	1.2uH		
L201	1-409-670-11	COIL, OSC			
L901	1-408-970-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q51	8-729-031-86	TRANSISTOR	2SC3142-J3J4-TB		
Q52	8-729-031-86	TRANSISTOR	2SC3142-J3J4-TB		
Q53	8-729-031-86	TRANSISTOR	2SC3142-J3J4-TB		
Q54	8-729-031-85	TRANSISTOR	2SC4365-34-TB		
Q102	8-729-031-85	TRANSISTOR	2SC4365-34-TB		
Q401	8-729-216-22	TRANSISTOR	2SA1162-G		
Q402	8-729-216-22	TRANSISTOR	2SA1162-G		
Q501	8-729-216-22	TRANSISTOR	2SA1162-G		
Q502	8-729-216-22	TRANSISTOR	2SA1162-G		
Q601	8-729-216-22	TRANSISTOR	2SA1162-G		
Q603	8-729-216-22	TRANSISTOR	2SA1162-G		
Q801	8-729-216-22	TRANSISTOR	2SA1162-G		
		< RESISTOR >			
R52	1-216-073-00	METAL CHIP	10K	5%	1/10W
R53	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R54	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R55	1-216-025-00	METAL GLAZE	100	5%	1/10W
R56	1-216-041-00	METAL CHIP	470	5%	1/10W
R58	1-216-085-00	METAL CHIP	33K	5%	1/10W
R59	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R60	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R61	1-216-029-00	METAL CHIP	150	5%	1/10W
R62	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R63	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R64	1-216-073-00	METAL CHIP	10K	5%	1/10W
R65	1-216-041-00	METAL CHIP	470	5%	1/10W
R66	1-216-033-00	METAL CHIP	220	5%	1/10W
R68	1-216-077-00	METAL CHIP	15K	5%	1/10W
R101	1-216-085-00	METAL CHIP	33K	5%	1/10W
R102	1-216-033-00	METAL CHIP	220	5%	1/10W
R103	1-216-025-00	METAL GLAZE	100	5%	1/10W
R203	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R205	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R206	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W
R208	1-216-085-00	METAL CHIP	33K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R209	1-216-109-00	METAL CHIP	330K	5%	1/10W
R210	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R211	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R213	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R214	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R215	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R221	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R301	1-216-033-00	METAL CHIP	220	5%	1/10W
R302	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R303	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R304	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R305	1-216-270-00	METAL GLAZE	1M	5%	1/8W
R306	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R307	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-043-00	METAL GLAZE	560	5%	1/10W
R310	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-295-00	METAL GLAZE	0	5%	1/10W
R403	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R404	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R405	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R406	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R501	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R502	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R503	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R504	1-216-107-00	METAL CHIP	270K	5%	1/10W
R505	1-216-085-00	METAL CHIP	33K	5%	1/10W
R509	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R510	1-216-109-00	METAL CHIP	330K	5%	1/10W
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W
R512	1-216-081-00	METAL CHIP	22K	5%	1/10W
R513	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R514	1-216-073-00	METAL CHIP	10K	5%	1/10W
R515	1-216-091-00	METAL CHIP	56K	5%	1/10W
R516	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R517	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R518	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R520	1-216-109-00	METAL CHIP	330K	5%	1/10W
R521	1-216-099-00	METAL GLAZE	120K	5%	1/10W
R522	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R523	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W
R526	1-216-073-00	METAL CHIP	10K	5%	1/10W
R530	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R532	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R533	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R535	1-216-085-00	METAL CHIP	33K	5%	1/10W
R601	1-216-029-00	METAL CHIP	150	5%	1/10W
R604	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R605	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R606	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R607	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R650	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R651	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R652	1-216-049-00	METAL GLAZE	1K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R802	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R803	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R804	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R805	1-216-073-00	METAL CHIP	10K	5%	1/10W
R806	1-216-073-00	METAL CHIP	10K	5%	1/10W
R807	1-216-073-00	METAL CHIP	10K	5%	1/10W
R808	1-216-073-00	METAL CHIP	10K	5%	1/10W
R814	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R816	1-216-073-00	METAL CHIP	10K	5%	1/10W
R818	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R819	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R820	1-216-073-00	METAL CHIP	10K	5%	1/10W
R821	1-216-073-00	METAL CHIP	10K	5%	1/10W
R822	1-216-073-00	METAL CHIP	10K	5%	1/10W
R823	1-216-073-00	METAL CHIP	10K	5%	1/10W
R824	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R825	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R826	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R827	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R828	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R829	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R830	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R831	1-216-073-00	METAL CHIP	10K	5%	1/10W
R901	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R902	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R903	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R907	1-216-113-00	METAL CHIP	470K	5%	1/10W
R908	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R920	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R923	1-216-081-00	METAL CHIP	22K	5%	1/10W

< SWITCH >

S801	1-692-990-21	SWITCH, SLIDE (BATT SAVE/RING ON)

< TRANSFORMER >

T201	1-409-671-11	COIL, IFT
T202	1-409-672-11	TRANSFORMER, IF

< VIBRATOR >

X301	1-760-326-11	VIBRATOR, CRYSTAL (10.20MHz)
X801	1-760-324-11	VIBRATOR, CRYSTAL (4.048MHz)
X802	1-567-098-41	VIBRATOR, CRYSTAL (32kHz)

****

*	1-659-134-11	HAND KEY BOARD

****

< CONNECTOR >

CN901	1-766-455-11	SOCKET, CONNECTOR 11P

****

MISCELLANEOUS

****

60	1-762-059-11	SWITCH, RUBBER KEY (HAND 1)
72	1-765-461-11	CORD, CONNECTION
73	1-765-612-11	WIRE, JUMPER
ANT1	1-501-704-11	ANTENNA, TELESCOPIC

Ref. No.	Part No.	Description	Remark
ANT501	1-501-703-11	ANTENNA, HELICAL	
⚠F401	1-533-542-11	FUSE (500mA/250V)	
⚠F451	1-533-542-11	FUSE (500mA/250V)	
M501	1-542-161-11	MICROPHONE, ELECTRET CONDENSER	
SP501	1-504-261-21	SPEAKER (2.8cm)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
⚠	1-467-498-21	ADAPTOR, AC (AC-T47)	
	1-528-764-81	BATTERY, LEAD STRAGE	
	1-775-541-11	CORD (WITH MODULAR PLUG) (LINE)	(FOR LONG)
	3-800-803-31	MANUAL, INSTRUCTION (ENGLISH,SPANISH,	CHINESE)
	3-916-982-01	SHEET, ADDRESS	
	3-931-470-01	CASE, WALL HOOK	
	X-3338-101-1	SCREW ASSY, TAPESTRY	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#2	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#3	7-685-146-11	SCREW +P 3X8 TYPE2 N-S	
#4	7-685-536-11	SCREW +BTP 2.6X12 TYPE2 N-S	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.